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Measuring structural characteristics of community fields: a case study

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MEASURING STRUCTURAL CHARACTERISTICS OF COMMUNITY FIELDS: A CASE STUDY

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Measuring structural characteristics of community fields: A case study

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DEDICATION

This dissertation is dedicated to my parents, Russell and Elaine Anderson. For their never ending love and support.

INTRODUCTION

The desire to use knowledge to improve life quality is not new. Indeed, Bacon (1900:315) asserted that scientific knowledge provides man with the power to take "command over things natural--over bodies, medicine, mechanical powers and infinite others of this kind." While knowledge potentially provides power to control the outcome of future events, the question of how best to apply that knowledge to improve human conditions remains a source of considerable confusion. Purposive efforts to "make life better" manifest themselves in diverse ways and at many levels of human organization.

Community Development: One Approach to Planned Change

A popular approach to planned change at the local level is community development. Christenson (1980) discusses three main approaches to community development. The technical assistance approach (Littrell, 1980) emphasizes top-down government planning and intervention. The confrontation or conflict approach (Robinson, 1980), as exemplified by Saul Alinsky's (1946) Back of the Yard movement, emphasizes organizing those outside of the traditional lines of power for action. The third approach emphasizes nondirective self-help and is sometimes equated with community development. While there are variations in the strategies adopted in the

community development process, a large part of the popularity that this approach enjoys can be attributed to its emphasis on a consensus model of planned change (Cary, 1979). Consensus strategies appeal to strongly held values that support a norm of cooperation. Therefore, development strategies that seek to build consensus are often thought to be the most appropriate and beneficial approach for implementing planned change at the community level.

While community development remains an ambiguous concept, many definitions emphasize nondirective self-help, directing attention on purposive action taken by local residents in an effort to improve the social, economic, or cultural environment in which they live (Goudy and Ryan, 1982; Christenson, 1982). Christenson and Robinson (1980:12) define community development as "(1) a group of people (2) in a community (3) reaching a decision (4) to initiate a social action process (i.e., a planned intervention) (5) to change (6) their economic, social, cultural, or environmental situation." A primary goal of community development is to initiate, direct, and sustain community action in response to perceived community problems. The essence of the community development process can be viewed as a purposive attempt to develop a change inducing system capable of effectively confronting local problems and acting on its own behalf (Kaufman, 1959, 1979; Wilkinson, 1969, 1979; Warren, 1977; Chekki, 1979).

A prominent component in most definitions of community development is goal directed social action. Community development practitioners and researchers face a dilemma since communities per se do not act, rather, it is individual residents, on behalf of themselves and/or organizations, who actually carry out activities directed towards the accomplishment of desired change objectives.

Although communities are not directly capable of action, there are, as Warren (1977) points out, important reasons to study community as a unit of social organization. Issues, events, and perceived needs frequently cross-cut a broad range of the interests that exist within local societies at any point in time. These cross-cutting issues may touch the lives of large numbers of local residents. Furthermore, such cross-cutting issues and events frequently affect a broad range of local organizations. An equally important reason to study community phenomena is that the resolution of cross-cutting issues and the accomplishment of broad local goals frequently require the formation of ad-hoc decision-making structures that are capable of marshalling a wide range of existing resources. Planned change objectives that extend the capacity of single organizations or institutional interests beyond their limits may be obtainable if the resources of a broad range of local interests are drawn

together.

The Need for a Holistic Perspective

Warren (1977) discusses two factors that frequently limit the ability to create effective change-inducing systems at the community level. First, many local problems are problems of society at large. As such, these problems generally are not amenable to action at the local level. Expectations that societal problems can be solved at the community level are simply unrealistic. Consider the difficulties faced by local residents who seek to reduce the level of unemployment in their community when national unemployment is very high.

A second limitation of planned change at the local level is an overemphasis on the accomplishment of specific objectives within organizational or institutional spheres, rather than towards the community as a holistic social unit. Segmented approaches to planned change direct efforts toward the accomplishment of task objectives that coincide with the interests of specific institutions and organizations found within local societies. For example, members of a local church may initiate action to raise money needed to purchase a new organ. In this case, social action is directed at the successful accomplishment of the specific task objectives of an organization. Even if such planned change objectives are

met, they benefit a relatively small segment of the local population. This does not deny the potential utility of segmented approaches to planned change; they have, and will continue to benefit, the residents of geographically defined localities. Nevertheless, when attempts are made to direct and understand the community action process as a whole, a segmented approach can be very misleading.

Another major limitation of segmented approaches to planned community change is that they frequently rely upon the implicit assumption that communities are well-integrated, collective entities in which a single public interest is readily identifiable. Given the assumption that communities are well-integrated social systems, the accomplishment of task goals in one interest sector of the local society is thought to be "functional" for the community as a whole. But, this assumption is clearly tenuous considering the range and diversity of interests extant in even relatively small rural communities.

Consider Blizek and Cederblom's (1973) discussion of the ethical implications associated with the commonly made assumption that communities have a right to determine their own goals and objectives. Among community development practitioners and theorists, this position is frequently viewed as "normatively neutral." But, as Blizek and Cederblom point

out, it clearly is not. The practitioner who helps accomplish task goals in one sector of the local society may be hindering or preventing the accomplishment of desired objectives in other sectors of the local society. Blizek and Cederblom use the example of a group of local residents that decides to pursue the goal of excluding certain racial or ethnic groups from their neighborhood. This objective is clearly not "normatively neutral" and it is highly unlikely that any community development practitioner would knowingly help achieve that objective, even though it was determined to be desirable by some segment of the community's population.

A less extreme example involves a community development practitioner who works with a local environmental protection group to enact stronger ordinances concerning industrial pollution while, at the same time, a local commercial group is striving to attract new industry. These goals may not be compatible. The community development specialist who helps local groups accomplish goals and objectives is, whether aware of it or not, making value-laden choices. Thus, community development theorists and practitioners must look at community action as a whole instead of looking only at isolated episodes of goal directed-activity.

Besides relying on overly simplistic assumptions concerning the monolithic nature of local interests, segmented approaches to planned change at the community level provide

relatively little understanding of the action processes that emerge when issues cross-cut a wide range of local interests. In such situations, existing community-decision-making organizations may not have legitimate jurisdiction; thus, the resolution of issues or the accomplishment of the desired goals and objectives require the formation of ad-hoc decision-making structures (Warren, 1975). Understanding the processes through which ad-hoc coalitions and decision-making structures are formed requires a perspective that extends beyond isolated episodes of goal-directed action.

A comprehensive understanding of community action is unlikely when attention is restricted to isolated episodes of goal-directed activity. Rather, a perspective that places action episodes within the broader context of social structure is required. For example, from a broad perspective one might ask if the same actors participate in multiple epidodes of goal-directed activity or if they limit themselves to activities that are of personal interest. It will be argued that actors who participate in multiple episodes of action provide a coordinative linkage between the action episodes. If these episodes of goal-directed social action represent distinct interest spheres in the community, then the multiple interest actors provide a mechanism though which the diverse interests of local society become integrated. When actors participating in issues and events are drawn from a broad

spectrum of local interests, then the resources available to accomplish desired change objectives tend to increase, and the control over those resources is spread out over a broad cross-section of the local society (Warren, 1977). Thus, one might speculate that broad citizen participation facilitates the accomplishment of some types of development objectives but hinders the accomplishment of other types of change objectives.

An additional reason that episodes of goal-directed action can best be understood by placing them within the context of social structure is that action episodes may directly compete with one another for resources. For example, consider the potential competition between the United Way and a local hospital fund drive as each seek financial contributions from local residents. Only by placing episodes of action within the broad context of social structure, can such direct competition be discerned and the unfolding of events understood.

Community Field Theory: A Holistic Perspective

One approach that provides useful insights into the dynamics of local social action is an interactional conception of community, as articulated in community field theory (Kaufman, 1959, 1979; Wilkinson, 1969, 1970a, 1970b, 1972,

1979). Community field theory is the application of social field concepts to the study of behavior in geographic localities. This perspective defines community behaviorally as purposive social action, but it differentiates community action from other goal-directed action within the local society (Kaufman, 1959). Briefly, community action consists of behaviors that integrate and coordinate the cross-cutting interests that exist within the local society.

The differences betweem a field perspective of community and a systems perspective of community are subtle but nonetheless, quite important. The concepts "social field" and "social system" are both used in reference to part-whole relationships. Common usage of the term social system implies a social whole in which the interrelationships among the parts exhibit at least some minimal degree of structural integration (Parsons, 1951). Using Parsons' functionalist perspective as an exempler of social systems theory, the function of integration in a system is believed to provide for effective response of the system to environmental change. Furthermore, a minimum level of integration is a functional requisite for the continued existence of social systems (Turner, 1978; Skidmore, 1979).

The concept social field, on the other hand, emphasizes the contemporaneous nature of social life (Yinger, 1965;

Wilkinson, 1970a; Mey, 1972). A social field is an emergent structure that may or may not exhibit systemic tendencies. The term, as an abstraction, is used to refer to the complex interrelationships among a definable set of parts. Whether the parts exhibit a degree of structural integration is a central question. Social fields are said to exhibit systemic tendencies only when the pattern of relationships among the parts is relatively enduring and when the content of the relationships serves to integrate the parts into a whole.

According to Fairchild (1944:159), integration refers to "that social process which tends to harmonize and unify diverse and conflicting units, whether those units be elements of personality, individuals, groups, or larger aggregations." Because the system perspective assumes that communities are structurally integrated wholes, the community as a collective entity becomes reified. Warren (1978) discusses the "great change" in American society and argues that behavior has become increasingly oriented toward specialized groups and interests that extend beyond the local community. He suggests that communities should be viewed as dynamic fields of interaction directed primarily toward extra-local forces but with occasional tendencies toward local integration.

The community field perspective assumes that the relationships among the parts within a local society are tenuous. Thus, emphasis is placed on the processes through which the

parts become integrated into a holistic social unit. Wilkinson (ca. 1980) notes four more or less distinct approaches that have been used to conceptualize integration. First, integration is believed to result from structural differentiation in which the parts become increasingly specialized and thus, more interdependent. The second approach views integration as the result of information and resource exchange among the parts of the system. From this approach, communication among the parts is the principal mechanism through which the parts become integrated to form a whole. A third approach emphasizes the way that aggregate characteristics of a population facilitate social integration. This approach assumes that individuals sharing similar status positions will be more likely than others to enter into cooperative action. The fourth approach views the process of individuals working together to resolve issues and pursue common objectives as the basic mechanism through which social integration occurs. It is this last type of integration that is of most interest to community field theorists. The community field is thought to be integrated to the extent that interactional processes express the full range of local interests.

Community field theorists begin their analysis of community structure by identifying important issues, programs, and events that have taken place over a given period of time within the local society (Beaulieu, 1977). Each issue or

program is viewed as a complex episode of goal-directed social action. Sutton (1970:56) defines complex action episodes as "any series of interaction events integrated and bounded by a common close relevance to some question, problem, or item of collective interest to a relatively numerous set of persons comprising the main decision makers in the events."

The Analysis of Goal-Directed Social Action

For the community field theorist, an analysis of complex episodes of goal-directed social action is of primary interest. The roles played by community actors in local action episodes, be they individuals or organizations, constitute the basic units of behavior from which community action structures emerge. Indeed, community leadership is defined in terms of behavioral roles that contribute to the attainment of community goals or the maintenance of the structural integrity of the community. From a field perspective, action episodes are not assumed to occur in isolation; instead, they are believed to be influenced by, and to simultaneously influence, the social structures in which they are embedded.

Sanders (1964) asserts that community development theory can be advanced by looking at community development activities as systems of social action. But, focusing on isolated

episodes of social action has done little to facilitate the development of systematic community development theory. Brokenshaw (1968) declares that the field of community development is devoid of knowledge. While Brokenshaw's indictment of community development theory is too strong, the relative lack of systematic knowledge in the area is obvious. Cary (1979) notes that most community development theory is in the form of principles and prescriptions for action that are generally based only on limited experience. Very often, such guidelines for action do not prove out in practice. In an earlier report, Sanders (1970) states that most community development theory is in the form of principles of action that are to be followed for effective community development practice. The lack of systematic community development theory severally hampers the effectiveness of community development practice. As Lewin (1951:169) asserts, ". . . there is nothing so practical as good theory."

An additional factor that has severely restricted the development of systematic community development theory has been a failure to develop explicit verbal and operational definitions of those features of the community system that are the target of planned change efforts. The primary goal of community development is creation of a community system that is capable of effectively confronting local problems and acting on its own behalf. But, clear definitions of what

constitutes healthy communities--that is, communities that are capable of acting on their own behalf--are generally not specified. This leaves the evolution of a systematic community development theory highly improbable, if not impossible.

An important step towards the development of systematic community development theory is the ability of evaluate the conditions under which alternative community development programs are successful. But, how can community development programs be evaluated when the desired outcome of such programs is not clearly specified? As Voth (1975) points out, a major problem for evaluating the effectiveness of community development programs is the ambiguity of desired objectives. Until the goals of community development programs are precisely specified, the conditions under which alternative development strategies are most likely to succeed or fail cannot possibly be addressed, nor can the relationship between community development and other planned change activities within the local society be examined.

These are but a few of the problems that a comprehensive theroy of community development must address. But, until clear verbal and operational definitions of salient community phenomena are developed, such questions cannot systematically be examined.

Community field theorists have taken initial steps toward the development of systematic community development theory. Kaufman (1979) and Wilkinson (1969, 1979) hypothesize a relationship between the style of action that characterizes a local society and the ability of the local society to act on its own behalf. From a field perspective, community development is normatively defined as either a qualitative or quantitative change in the structure of social action that enhances the degree of coordination among the many episodes of goal-directed action that unfold within a local society. In short, community development involves planned change activities that integrate the parts existing within a local society into a whole. Such activities contribute to the systemic tendencies of the local society. This definition of development implies that local action structures exhibiting a high degree of structural integration are somehow "better" than local action structures in which the parts exhibit a high degree of autonomy.

Empirical research cannot answer the value question of what should be; however, it can help to assess the ways in which alternative styles of social action facilitate or hinder the accomplishment of desired change objectives. Wilkinson (1979) argued that a community action style that is highly coordinated facilitates the accomplishment of desired objectives. Hawley (1963), on the other hand, found that the

concentration of power in the hands of a few facilitated the success of urban renewal programs. While research cannot specify what ends should be pursued, it can help determine what means are most likely to facilitate the accomplishment of desired ends. Before this needed research can be undertaken, however, techniques to measure important characteristics of community action structure must be developed. These techniques will facilitate comparative community research.

Purpose of the Dissertation

The primary purpose of this dissertation is to illustrate procedures that can be used to measure important characteristics of community action structures. The techniques presented here will be useful in future research on the structure of planned change at the community level. No attempt will be made to clear up the ambiguity associated with the concepts community or community development. Instead, the much more modest goal is to clearly articulate one theoretical perspective that can be used to examine salient characteristics of community action.

Accomplishing this goal requires the completion of several specific tasks. First, social field theory as a general theory of purposive social action will be outlined. A

fundamental tenet of social field theory is that social structure emerges during on-going processes of goal directed interaction. Secondly, the concepts "community" and "community development" will be defined from a social field perspective. Specifically, community will be defined in terms of goal-directed social interaction and community development will be defined in terms of purposive efforts to integrate and coordinate the structure of social interaction. Third, the natural concordance between social field theory and network analysis, a method for analyzing structures of social relationships, will be developed. Network analysis is a technique that promises to further our understanding of community structure and change. A variety of models used to describe network structure will be described and models having particular relevance for the study of community organization will be estimated. Finally, the implications for the theory and practice of planned community change will be considered.

EMERGENT SOCIAL FIELDS AS NETWORKS OF SOCIAL INTERACTION

The concept "field" has been used in a wide range of scientific endeavors to describe the interrelated nature of highly complex phenomena. In the physical sciences, the "action at a distance" problem provided a primary impetus for the development of field theory (Rummel, 1977). This problem focuses on how the occurrence of one event can influence the occurrence of another event when the events are separated by relatively empty space through time. For example, how can the gravitational forces of the moon influence ocean tides? Or, how can magnets attract or repel electrically charged objects across relatively empty space? The English scientists Faraday and Maxwell applied the term field to the complex interactions and forces that they observed between electric charges and currents (Capra, 1975). Faraday and Maxwell hypothesized that an ether-like medium pervades relatively empty space and that waves of energy travel through this ether-like medium producing the observed electromagnetic phenomena. Thus, for Faraday and Maxwell, electromagnetic fields consisted of the physical object and its force field.

Fields as Unitary Wholes

This largely mechanistic conception of electromagnetic fields, in which matter emits energy through an ether-like medium, has generally been superseded by contemporary quantum field theory. In later formulations, the distinction between the physical object and its force field disappears. Instead, energy and matter are viewed as different forms of the same thing, and therefore, constitute interdependent parts of the same unitary whole. Material objects not only influence the structure of the surrounding space but are, in turn, simultaneously influenced by the field of interconnected forces. Indeed, Capra (1975), indicates that in contemporary quantum field theory, material objects are not conceived of as distinct entities, but as phenomena that can only be understood in terms of their interaction with the world. Thus viewed, physical things are simply momentary manifestations of an underlying fundamental entity or field of interaction.

Wilkinson (1970a:312) asserts that the term field can refer ". . . either to the context of an object or to the configuration formed by the object and its context, to structure or to structure-process, to the backdrop of action or to the action along with its backdrop, but never to the object alone." Wilkinson (1970a) specifies four characteristics that are common to all phenomena presumed to constitute fields. First, a field is a holistic interaction nexus

in which the elements mutually influence one another and include both the causes and consequences of focal objects and events. Second, the boundaries of fields are not, and cannot easily be, clearly demarcated. Fields are analytical constructs that can be distinguished from one another on the basis of their characteristic core of field relevant properties. This is an especially important consideration for empirical investigation because the operationalization of fields requires the observer to impose arbitrary boundaries at a point beyond which the interactions of the elements are relatively insignificant in their contribution to the dominant character of the field. Third, fields are dynamic, constantly changing in both structure and process as elements realign themselves or enter and leave what is operationally defined as the field at any given moment in time. This implies that there are two ways in which fields may change. Either the form and content of relationships among the elements may change or elements may migrate into or out of the field. The fourth characteristic of fields specified by Wilkinson is that fields emerge from the interaction of elements within the holistic interaction nexus. Thus, as analytical constructs, fields are inferred from concrete observations of interaction among the elements.

Lewin (1951) used the term field to describe the total

situation in which social characteristics stand in definite relation to one another, thus, giving the concept social meaning. He defined a field as "a totality of coexisting facts which are conceived of as mutually interdependent" (Lewin, 1951:240). Lewin's primary concern was explaining and predicting individual behavior, which he broadly defined to include cognitive as well as physical behavior. Lewin believed that individual behavior was a function of the person and his or her environment, each of which mutually influences the other. He (1951:239) argued that ". . . to understand or predict behavior the person and his environment have to be considered as one constellation of interdependent factors."

A frequently criticized component of Lewin's field theory is the principle of contemporanity (Cartwright, 1951). Lewin (1951:45) summarized this principle when he stated that "Any behavior or any other change in a psychological field depends only upon the psychological field at that time." Murphy (1947) criticized the principle of contemporanity as an inherently static conception that failed to account for how past states of the situation influence the present state of the situation. One should recall, however, that Lewin defined behavior very broadly to include cognitive as well as physical behavior. Therefore, the state of the field at time t includes the past (i.e., the thoughts, habits, values, and so on of the individual) and a change in behavior depends only upon the situation at time t. As Lewin (1951:54) states, "It is

important to realize that the psychological past and the psychological future are simultaneous parts of the psychological field existing at a given time."

The principle of contemporanity further implies that fields themselves are momentary things, with new fields being formed all the time. This occurs because any change in behavior produces a new situation that is different from any previous situation. Cartwright (1951) asserted that the principle of contemporanity stemmed from Lewin's view of field theory as a method for analyzing causal relations and predicting individual behavior. Instead of developing a theory of social fields, Lewin used the field construct to explain and predict situationally relevant behavior. Thus, Lewin was less concerned with how the field at time t-1 influenced the state of the field at time t than how the state of the field at time t influenced situationally relevant behavior.

Murphy (1947) questioned Lewin's notion that new fields are constantly being formed. Instead, he developed a field theory in which the individual and his or her environment constitute an inseparable unity or field that is loosely bounded and continuously changing, yet, which exists through time in a state of endless becoming. Thus, for Murphy, social fields exhibit a degree of continuity through time.

The controversy concerning Lewin's principle of contemporanity may well be more a problem of semantics than substance. This distinction, however, may prove useful when social field concepts are applied to community and community action. Referring to development of a field as a theoretically interesting emergent property implies that the field of interaction persists and changes through time. Reference to the structure of a social field, on the other hand, directs attention to the structure of social relations that exist among the elements in the field at a given moment in time. Due to the dynamic nature of social fields, it is highly unlikely that this structure will be exactly the same from one moment to the next.

Following the lead of Lewin, Wilkinson (1970a) distinguished field theory as a method from a theory of social fields. As a method for analyzing causal relations among highly interdependent elements, the social field perspective emphasizes the idea that events and objects have multiple causes that interact in ways that constitute an emergent whole with properties of its own. A theory of social fields, on the other hand, regards the emergent whole, and the properties that characterize that whole, as interesting constructs that deserve theoretical elaboration and empirical investigation.

Rummel (1977) characterized the philosophy of social field theory as relating behavior to the total situation in

which it occurs. According to Rummel, the total situation forms a field consisting of social characteristics that stand in definite relation to one another. Behavior is viewed as a consequence of the total situation and is relative to other behavior, as well as to the similarities and differences in the social characteristics of other social actors. This is different than most sociological theory which directs primary attention to concommitant variation among the attributes and characteristics of individuals and populations. Thus, just as contemporary quantum field theory views matter and energy as inseparable elements of the same unitary whole, social field theorists view the social actor and his or her environment as inseparable elements of the same unitary whole. As Murphy (1947:891) stated, "We cannot define the situation operationally except in reference to the specific organism which is involved; we cannot define the organism operationally, in such a way as to obtain predictive power of behavior, except in reference to the situation. Each serves to define the other; they are definable operationally while in the organism-situation field."

Following a similar line of reasoning, Yinger (1965) asserted that both the individual and the situation are unknowns that can only be defined when the other is also defined. For Yinger, the situationally relevant behavior of individuals

was explained by the total situation which included both the characteristics of the social actor and the characteristics of the actor's environment. For the social field theorist, behavior has no meaning apart from the total situation in which it occurs, and the total situation has no meaning apart from the behavior of the elements constituting the field.

A Perspective for Studying Social Relations

Anderson and Willer (1981:2) assert that all human events contain, in varying degrees, elements of biophysical, social, and cognitive phenomena. According to Anderson and Willer, biophysical phenomena include the biological and physical conditions of humans and their environments. Social phenomena include social relationships among social actors as they occur in processes of social interaction. And cognitive phenomena include thoughts, values, beliefs, and systems of knowledge.

Anderson and Willer (1981) utilize this three-fold classification of human events to analyze the content of sociological theory. They assert that a fully general theory of human behavior should include all three components of human affairs and relate the parts into an integrated theoretical system. While a fully general theory of human behavior is

clearly a laudable goal, such an integrated theoretical system does not loom eminent on the horizon of social scientific theory.

A limitation of the social field perspective is the emphasis it places on the social relational rather than biophysical or cognitive aspects of social organization. The primary concern of social field theory, as presently formulated, is understanding the properties of social structure that emerge from social action and interaction.

A Perspective for Studying Purposive Social Action

Theories of social action generally begin with the premise that the behavior of individual social actors has a purpose. Social actors, be they individuals, complex organizations, or some other unit of social organization that is of interest, are assumed to act with intent or direction towards accomplishing some desired outcome. Although social actors can be defined as any unit of social organization, this discussion will be limited to individuals.

According to Burt (1982a), a broad class of social action theory, referred to as the atomistic perspective, assumes that individual social actors behave independently of one another. The atomistic perspective is highly pervasive and can be found in behavioral psychology, classical economics, and many

variants of social exchange theory. In classical economics, for example, each actor is thought to control resources that are valued by other actors. Different actors possess different types and amounts of resources. Resources are defined as resources simply because they are valued and therefore, sought by other actors. Each individual actor is assumed to rationally assess the potential utility of alternative lines of action for accomplishing desired ends. Typically, these alternative lines of action involve the exchange of resources controlled by an individual for resources that are valued by that person but which are controlled by other actors. Finally, each rational social actor will choose the line of action perceived to maximize profits or minimize losses. From an atomistic perspective, the behavior of each individual is viewed as entirely independent of the behavior of other actors. Emerging social structures, such as economic markets are seen as little more than the aggregate result of many actors independently striving to maximize their own self-interest.

As a theory of purposive action, the social field perspective assumes that social actors are motivated by their self-interests to engage in social interaction. But, unlike the atomistic perspective, the behavior of actors is viewed as highly interdependent rather than independent. As Wilkinson (1969:32) notes, "the major categories of man's

social interests are characterized by the presence of inter-actional processes."

Thus, from the social field perspective, actors are assumed to evaluate alternative lines of action within the constraints and opportunities accorded their position in social structure. Different structural positions impose varying degrees of constraint on the ability of actors to use the resources they control to accomplish goals consonant with their self-interests (Burt, 1980b; Marsdan, 1982). At the same time, some structural positions facilitate the accomplishment of desired ends for the occupants.

The theoretical model presented here does not account for the possible existence of higher-order interests. Personal gratification is assumed to be the principal factor that motivates individual participation in episodes of goal-directed social action. Thus, purposive efforts to achieve community goals and objectives are not assumed to represent a "community conscience."

Following Emerson (1962) and Coleman (1973), the ability of actors to accomplish desired outcomes is thought to be constrained by the mutual dependencies that exist among the actors within the system. "A depends upon B if he aspires to goals or gratifications whose achievement is facilitated by appropriate actions on B's part" (Emerson, 1962:32). Of course, this implies that the ability of A to achieve desired

goals can be hindered by inappropriate actions on the part of B. Because the actions of individual social actors are highly interdependent, they cannot be fully understood apart from the social structure in which they are embedded.

For the field theorist, social actors are differentiated on the basis of the roles they play in the process of goal of goal directed social action. Behavioral roles are an especially salient feature of social fields. Indeed, social fields emerge from and have their very existence in the interaction of behavioral roles. Behavioral roles are said to stand in a definite relation to one another and are the primary elements of a social field. From a social field perspective, the term role simply refers to the actual occurrence of behavior apart from ideas concerning the appropriateness of that behavior.

While field theory is primarily concerned with social relational phenomena and the structures that emerge from social interaction, the cultural aspects of social organization do not go completely unrecognized. Wilkinson (1970a) draws a distinction between the social and cultural aspects of social organization. The social relational component of social organization is observed in the actual occurrence of social interaction. The cultural components of social organization are observed in shared ideas about social interaction. In short, the social relational component of social

organization consists of the actual behavior that is displayed, whereas, the cultural component of social organization specifies what behavior is appropriate.

The distinction between social relational and cultural components of social organization is important because the shared ideas about behavior are thought to provide direction to the ongoing process of social interaction. Thus, the cultural components of social organization contribute to the temporal continuity of social field structure. Direction is derived from the objectives or goals of interaction and serves to distinguish one social field from another.

A simple, somewhat contrived example serves to clarify a number of these points. Consider a system of ten individuals that live in relatively close proximity to one another. Assume that each is interested in playing the card game bridge. It takes a minimum of four individuals to play a game of birdge; therefore, none of these individuals alone control the resources necessary to satisfy their self-interest. In effect, each individual is constrained by the behavior of others. In this situation, the constraint manifests itself as a dependency on others as playing partners.

With the introduction of an additional assumption, one way that social structure constrains individual behavior can be specified. Specifically, the individual actors in the system are assumed to have access to a varying number of other

actors. More generally, the actors within a system are assumed to possess differential access to available resources. An individual interested in playing bridge, but who knows or has access to only three of the remaining nine actors in the system is highly dependent upon each of them to satisfy his or her self-interest. On the other hand, an individual who knows all nine of the other actors in the system is much less dependent upon any one of them to satisfy personal self-interests. Thus, we can conceive of an interactional structure that is characterized by mutual but asymmetric dependencies that place structural constraints of the behavior of the actors in the system.

If the individuals collectively pursue their interest by playing the card game bridge, a process of social interaction, referred to as a social field, will be observed to emerge. Even in this relatively simple process of interaction, individuals may be differentiated on the basis of the behavioral roles that they play. For example, one or more individuals may be the organizers of bridge games. Other individuals may serve as hosts for the bridge games. Some individuals may bring refreshments. And others may simply play the role of participants. Thus, a structure of social relations emerges as these individuals act to achieve desired goals. For this example, the emergent structure is defined by

the interaction that these individuals engage in as they pursue their interest in bridge.

The structure of social relations acquires direction from shared interests and temporal continuity from shared ideas concerning the appropriateness of behavioral roles. Over time, the structure of the social field may acquire a high degree of stability as the ideas about behavioral roles become widely diffused and accepted throughout the system. Nevertheless, the structure of social relationships is always subject to change as elements enter and leave the interaction nexus.

Community: An Arena of Goal-Directed Social Interaction

Community field theory is the application of social field concepts to the study of the social organization of geographic localities. Because social field theory seeks to explain social action, community field theory can be viewed as a theory of community action. As such, attention is directed toward the social structures that emerge as actors in localities pursue desired objectives.

According to Sutton (1964), any theory of community action must distinguish activities that are communal in nature from those that are not. Because much of the goal directed activity that occurs at the local level is not related to the

community as a whole, this is not an easy task. Merely because episodes of action take place within the local society does not make the event a community phenomenon Poplin, 1979).

Community field theory emphasizes the social relational aspects of local organization. Community phenomena are defined in terms of social interactions that have relevance for the entire locality. The geographical characteristics of the area and the psychological identification of residents with place receive far less emphasis. Nevertheless, these dimensions of community are thought to influence the structure and process of interaction as well as being simultaneously influenced by those social processes.

Sutton and Kolaja (1960a) developed a concept of community that is generally consonant with the community field perspective. They (1960a:198) argue that ". . . community phenomena consist of all those social interactions which arise from and/or embody the efforts of many or most persons and groups to shape the major decisions and conditions constituting solutions to the problems which flow from the common use of an area; . . . ." For Sutton and Kolaja the community refers to a structured unit of social organization that emerges from interactions that become sufficiently patterned to say that they comprise an identifiable entity. Field

theorists refer to this identifiable entity as a social field.

According to Green and Mayo (1953), the locality orientation of social action is the distinguishing feature of community action. Sutton and Kolaja (1960b) utilize a four-dimensional cross classification with which they assess the "communitiness" of any activity that occurs within some geographic locality. According to Sutton and Kolaja, social activities vary along these four dimensions in the degree to which they have relevance for community as a unit of social organization.

First, Sutton and Kolaja (1960b) argue that the degree to which activities have relevance for the community varies positively with the number of locally based actors that are involved as participants. Second, the degree to which actions have community relevance varies positively with local awareness that social action is taking place within the community. Third, activities are said to have more community relevance when the goals of action are collective rather than private. And fourth, the community relevance of activities varies directly with the effect an activity has on members of the community.

Kaufman (1959:13) presents a similar set of criteria that can be used to differentiate community action from other activities occurring within geographic localities. According to

Kaufman, actions are relevant to the community to: (1) the degree that the interests pursued and the needs met by actions are comprehensive; (2) the degree to which the action is identified with the community; (3) the number and degree of involvement of local actors, including both residents and associations; (4) the degree to which the action maintains or changes the community, and (5) the degree to which action is organized.

For field theorists, community action is a special type of locality-oriented action (Wilkinson, 1970b). An episode of action is locality-oriented if the principal actors and beneficiaries of social action are local residents and associations, if the goals of social action represent the interests and desires of local residents, and if the benefits of action include persons in addition to the principal actors.

It should be realized that although action may be locality oriented, it may have little relevance for the community as a whole. Many episodes of social action are directed towards the accomplishment of interest specific goals. Think back to the example of the church group that initiates action to raise the funds needed to purchase a new organ. The principal actors and beneficiaries of this action are local church members. And the goal of the action is a goal of local residents. Thus, this action is clearly locality-oriented. Nevertheless, this action exhibits relatively low community

relevance because the action expresses a very narrow range of local interests. According to Wilkinson (1970b:57), a defining characteristic of community action programs is that they express a broad range of local interests.

This distinction between locality-oriented action and community action is critical to community field theory as numerous episodes of goal directed activity are assumed to be simultaneously unfolding within any geographically definable locality at any point in time. As Kaufman (1959) and Wilkinson (1970a) point out, numerous social fields, frequently differentiated along institutional interest lines, may be observable within any local society. One may observe, for example, a social field defined by action oriented towards accomplishing the goals and objectives of local education, health care, labor relations, industry and commerce, social welfare, social control, or any number of other local interests.

A key problem for community field theorists is to distinguish one local interest field from another. This is difficult because the boundaries of social fields cannot be clearly demarcated. Social fields that exist within a local society do not have clear boundaries; instead, they are presumed to shade into one another. Local interest fields can only be distinguished on the basis of the content of goal

directed activities. Each of the local interest fields is empirically observable through the actions of individuals and associations as the objectives of local interests are pursued.

According to Wilkinson (1969), the identification of social fields within a locality is an inductive process. The form and content of the interaction process serves to define the social field. Different local societies are likely to be characterized by different interest fields, the presence of which can be inductively inferred by observing the content of local interaction. The need to identify fields inductively has profound implications for empirical research. Instead of entering the field with a set of a priori defined categories, one must use inductive strategies to uncover the existing interaction spheres. Wilkinson does, however, suggest nine institutional interest areas in which the pursuit of desired objectives can frequently be observed to define interactional fields. These institutional areas include health care, education, recreation, government relations, industry and commerce, conservation, public facilities, public fund raising, and general community planning and development. It is important to remember that this is merely a guideline to commonly observed spheres of interaction and that within any locality special interest fields may be differentiated on the basis of any number of other interests.

The community field is but one of the several locality-

oriented social fields. The community field is viewed as emerging from, as well as acting upon, the special interest fields in a local society. The basic premise is that the special interest fields within a locality are related to one another through a coordinating process. This coordinative process is referred to as the community field and emerges from actions that integrate the special interest fields into a whole. Such actions provide systemic tendencies for the local society to act on its own behalf.

The community field is distinct from other locality-oriented fields in its unique, multi-interest focus. The community field emerges from the overlap of common actors in multiple special interest fields. This overlapping participation of individuals and/or associations in multiple spheres of activity promotes coordination among diverse institutional interest sectors. From the community field perspective, the structure of community action is coordinated or integrated through the actions of individuals that bridge multiple interest related activities.

Dasgupta (1974) suggested that actions can contribute to the integration among the institutional interest fields within a local society in two distinct ways. First, institutional interest fields become integrated when individuals representing diverse interest spheres within the local society

become involved in the decision-making process within a particular interest area. When this occurs, the cross-section of interests represented by the actors in the action process contributes to the multi-interest focus of the community field. As an example, consider a hospital that seeks to develop a renal-dialysis program. When individuals representing a broad range of local interests become involved in pursuing this goal, the integration of the community field structure increases. Here, integration occurs through the joint participation of individuals representing diverse interest in the pursuit of special interest goals.

Actions also contribute to the multi-interest focus of the community field when the goal or objective of the action process itself represents a cross-section of local interests (Dasgupta, 1974). As an example, consider a local society in which flood control is a major problem. The objective of developing effective flood control strategies represents a broad range of local interests and the accomplishment of this goal will benefit a wide spectrum of the local population. Actions that contribute to the development of effective flood control are said to contribute to the multi-interest focus of the community field.

The community field is thought to be an important social structure in local society; it is through the community field

that local action and behavior becomes channeled to meet broad community goals. Without such coordinative activity, the local society can be described as an "ecology of games" (Long, 1958). According to Long, the various institutional spheres that exist within communities are largely unaware of each other as they play their own game and seek to maximize their own interests. In an "ecology of games" there is little or no coordination between institutional spheres of activity. Nevertheless, Long (1958) argues that the patterns of coexistence symbiotically work themselves out in ways that are generally functional for the local society.

Long's (1958) characterization of community as an "ecology of games" is generally inconsistent with the position taken by community field theorists. Indeed, community field theorists emphasize the importance of a coordinative structure. Nevertheless, Long's discussion highlights questions of key concern for community research. Specifically, to what degree are communities characterized by a coordinative action structure? And what are the implications of a coordinative action structure for programs of planned change? The degree to which actions representing special interests within the local society are coordinated is a central question of community field theory. As Wilkinson (1969:33) notes ". . . a central proposition for community research is that over the long run sustained achievement across the board - that is,

comprehensive development - requires integration and coordination among interest fields."

Community Development from a Community Field Perspective

Community field theorists contrast development of the community with development in the community (Kaufman, 1959; Stinson, 1979). Development in the community is oriented toward the accomplishment of specific goals and objectives, it is a segmented approach to planned local change. Development of the community, on the other hand, is oriented toward improving the local action structure to enhance the coordination among local elements.

Warren (1978) notes that community planning and community development often emphasize the need for increased coordination of parts through a collective guidance system. From a community field perspective, such guidance is provided through an integrated action structure. The community is defined as an interactional field with a unique multi-interest focus (Kaufman, 1959, 1979; Wilkinson, 1970a). And community development is defined as any purposive activity that increases the integration and coordination among the special interest fields existing within the local society (Kaufman, 1959, 1979; Wilkinson, 1969, 1972, 1979). Thus, development is defined in terms of purposive actions that improve the

interactional structure by increasing the degree to which diverse spheres of goal directed activity are coordinated with one another. These nominal definitions of community and community development provide a useful base line from which the effects of alternative community developmentprograms can be evaluated. In addition, these definitions provide a base line from which the structural contingencies that determine program effectiveness can be empirically assessed.

From the community field perspective, an integrated action structure is presumed to provide the local society with greater problem-solving capacity than an action structure characterized by high autonomy among the parts (Kaufman, 1979; Wilkinson, 1979). The structure of local social action can be imagined as a network in which resources such as knowledge, money, and social support are channeled and diffused. Bott (1971) and Meyor (1975) argue that resources can be mobilized more quickly in social networks characterized by dense social relationships than in networks having fewer ties. Furthermore, a highly integrated action structure facilitates the formation of coalitions of special interest actors around broad local issues. Thus, one might hypothesize that local action structures that are disjointed or which have a low density of social ties would have greater difficulty channeling the resources necessary for the accomplishment of broad local

goals than communities with dense and well-connected action structures, all else being equal. Because community field theory directs attention to the goal-directed structures of social interaction it is highly concordant with network analysis. Network analysis is a method for analyzing structures of social relationships that promises to further our understanding of community structure and change.

Models of Network Structure

Mitchell (1969:2) defines a social network as "a specific set of linkages among a defined set of persons with the property that the characteristics of those linkages as a whole may be used to interpret the social behavior of the persons involved." The term network analysis has been used in reference to a broad and diverse array of theoretical and empirical approaches that have been developed to study social networks (Burt, 1980a, 1982a; Knoke and Kuklinski, 1982). Barnes (1972:42) described the network literature as ". . . a terminological jungle in which any newcomer may plant a tree." The purpose here is not to provide a comprehensive overview of this terminology; instead, the intent is to illustrate the range and diversity of the network perspective while focusing attention on techniques having important implications for the analysis of community action.

The key element that distinguishes network analysis from other types of sociological analysis is that it directs primary attention to the patterns of relationships among a set of social actors, however defined. Social actors may be individuals, organizations, communities, nation states, or any unit of social organization that is of interest to the investigator.

Network analysts are primarily concerned with structural, often referred to as relational, properties (Lazarsfeld and Menzel, 1961; Coleman, 1958). Lazarsfeld and Menzel (1961: 428) define structural properties as ". . . properties of collectives which are obtained by performing some operation on the data about the relations of each member to some or all of the others." Relational properties are not intrinsic characteristics of any social actor viewed in isolation, but emerge from the connections and linkages between units of observation. These relations exist only if two or more social actors intersect with one another. According to Knoke and Kuklinski (1982), relational properties can be used to differentiate the actors within a social system in a wide variety of ways, including their influence, power, popularity, prominence, and centrality. Within the community, important social actors are usually individuals or organizations.

Relational properties emerge from the linkages or relationships that exist between the N actors in a system and

have meaning only within the context of a defined system of social relations. Here, the term system is used simply to refer to a set of N social actors, however defined, without reference to the systemic tendencies of the interrelationships among those actors. Relational properties are intrinsic characteristics of social relationships rather than the individual actors.

One should note the natural coincidence of the network perspective with social field theory. Social fields are said to emerge from goal-directed episodes of social interaction and have no meaning apart from the interaction of the participants in the action episodes. The language of network analysis provides a formal mechanism with which to express the concepts implied by social field theory.

Network analysis and theory rely on the assumption that social actors participate in social systems involving many other actors who serve as important reference points for each actor's behavior. Furthermore, the network analyst assumes that the location of actors within the network of social relations has important behavioral, perceptual, and attitudinal consequences for the individual actor as well as the social system as a whole (Knoke and Kuklinski, 1982).

The relations among social actors are said to have both form and content (Burt, 1980a, 1982a; Knoke and Kuklinski, 1982; Barnes, 1972; Mitchell, 1969, 1974). Relational form

exists independently of relational content and refers to the properties of the connections between pairs of actors. Relational content, on the other hand, directs attention to the nature of the tie itself. Different types of social relations define different types of social networks. Knoke and Kuklinski (1982) list several types of relational content that have been studied by social researchers. Here, a relatively brief summary of their listing is provided to illustrate the broad range of social relationships that can be studied from the network perspective.

Types of relational content

Knoke and Kuklinski (1982) use the term transaction relations to describe relationships in which social actors exchange control of physical or symbolic media. The linkages through which actors transmit information are referred to as communication relations. Instrumental relations exist when social actors contact one another in an effort to secure valued goods, services, or information. Knoke and Kuklinski (1982) use the term sentiment relations to refer to relations of friendship, admiration, emotional support or hostility. Authority/power relations are social networks that indicate the rights and obligations of actors to issue and obey commands. Kinship and descent relations represent the relationships of roles among family members. And boundary penetration relations are those in which social systems are

linked through the overlap of common actors.

This brief description of types of relational content is far from complete but does illustrate the types of research problems that can be addressed through the application of network analysis. The substantive concerns addressed in this dissertation direct attention to authority/power relationships that reflect individuals' positions within the community action structure as well as the boundary-penetration relations through which that structure becomes integrated.

Network models that describe authority/power relations are particularly important because they can be generalized to describe leadership contributions in the community field. Models describing boundary-penetration relations are especially salient because they can be used to parsimoniously describe the participation of community actors in multiple spheres of goal-directed activity. It is such multiple interest activity that provides integration and coordination to the community action structure.

The form of social relations

The form of social relations is a measure of the strength of relations between pairs of actors (dyads) in the social system (Burt, 1980a, 1982a). Thus, relational form refers to characteristics of the connections between actors that are independent of relational content. Social relations with very

different content may take the identical form. Measures of relational form are frequently derived from binary sociometric choices in which the strength of a tie between any two actors is measured as present or absent.

Since Moreno's (1934, 1960) development of sociometry, sociometric choice data has often been represented as a directed graph (or digraph). Harary et al. (1965) define a digraph as a set of g nodes (social actors) and a set of directed arcs that serve to connect the pairs of nodes.

A second approach to the measurement of relational form is to examine the joint involvement of social actors in the same activities, events, or units of social organization. Perrucci and Pilisuk (1970), for example, studied the inter-organizational relationships created through the joint involvement of individuals on corporate boards of directors.

Breiger (1974) provides an interesting discussion of the dual nature of social relationships that are implied by the joint participation of social actors in activities or events. Not only are the individual social actors linked to one another through their joint participation in the same activities, but the activities or events themselves are linked through the intersection of individual social actors. Network analysis of actors' joint participation in special interest fields provides a straightforward technique to study integration and coordination among distinct spheres of goal directed activity.

Types of network models

Burt (1982a) presents a six-fold typology that captures and organizes the range and diversity of alternative network models. Burt's typology is based on two dimensions--the analytical perspective utilized by the investigator and the aggregation of social actors in a unit of analysis (Table 1).

Some models of network analysis take as their unit of analysis a single social actor. Other network models aggregate the actors within the social system into subgroups which then become the basic unit of analysis. Still other approaches take as their unit of analysis the entire network of social relations. Burt (1982a) notes that each of these units of analysis have been studied from two distinct perspectives.

According to Burt (1982a), network models that rely on the relational perspective are used to describe the intensity of relationships between the actors in the social system. This perspective focuses attention on the importance of social relationships that are present while ignoring ties that are absent. Thus, network models developed from a relational perspective restrict attention to a limited number of the possible relationships within the social system.

The positional approach, on the other hand, describes the location of actors in the social system based on their ties to

Table 1. Burt's typology of network analysis

Analytical Perspective	Unit of Analysis: Individual Actor	Network Subgroup	Network as Social System
Relational	Ego Network	Network Cliques	Network as dense or transitive
Positional	Network position as central or prestigious	Sets of structurally equivalent actors	Network as centralized or hierarchical

all other system actors. From the positional perspective, the absence of social ties is as important as the presence of ties for defining the location of actors in the social system.

The first type of network model discussed by Burt (1982a) is referred to as the ego-network. This is a relational approach that takes the individual social actor as the unit of analysis. The ego-network of actor i consists of all the actors with whom actor i has a direct relation and the relations among these social actors. Typically, ego-network models seek to describe the range, density, and multiplexity of ego's social relationships with other actors.

The range of the ego-network refers to the number or heterogeneity of actors with which ego has social relations. The density of the ego-network is defined as the degree to which the actors in the ego-network are connected by intense

social relations. Kadushin (1982) defines density as ". . . the ratio of the number of social relations that actually exist in a system to the number of possible such relations." The ego-network is multiplex to the extent that social relations between ego and the other actors in the ego-network acquire multiple types of relational content.

The analysis of ego-networks often resembles attribute-based research. But, here, measures of the intrinsic attributes of social actors are supplanted by measures derived from the actor's social relationships. Kadushin (1982), for example, found a positive relationship between ego-network density and mental health among men eligible to serve in the Vietnam war. And Wellman (1982) has rediscovered "community" in personal networks of social relationships and support systems that exist beyond the boundaries of local societies and neighborhoods.

A second type of network model describes the location of each actor in the system in relation to all other actors in the system. Burt (1982a) refers to this type of model as the network position. Like models of the ego-network, the basic unit of analysis is the individual social actor. But, in this case, the social relations between ego and others that are not present are as important as the social relations that are present for defining ego's location in the social

system. Typically, this approach is used to measure an actor's centrality or prestige within the social system.

An actor's position centrality is defined as the extent to which all social relations within the social system involve that actor. Freeman (1977, 1979) describes several measures of actor centrality and develops a measure in which the actor's position is defined as central to the extent that the actor is "between" any two actors who wish to contact one another. Burt (1982a:35) defines position prestige as ". . . the extent to which an actor is the object of strong relations from other actors who themselves have prestige." While centrality and prestige are both measures of prominence or visibility within the social system, there are important differences.

Measures of position centrality do not distinguish between actors as the source of social relationships and actors as the object of social relationships. Measures of position prestige, on the other hand, assume that prominent actors are the object of social relations rather than the source of social relations. In the case of symmetric social relations, the distinction between position prestige and position centrality disappears.

Knoke and Burt (1982) provide a description and comparison of five measures of position centrality and five measures of position prestige. They found that the measures

of position centrality and prestige have substantively different implications. However, the five measures of centrality were highly correlated with one another as were the five measures of position prestige.

While no attempt is made to describe the variety of prominence measures available, formal measures of position prestige within the community action structure will be developed. From a social field perspective, leaders are the active participants in the process of social action and thus, influence the community action structure through their participation in events rather than through a reputation for power.

The third category of network models described by Burt (1982a) relies on the relational perspective to describe the social relations among a subgroup of actors within the social system. These models direct attention to identifying and describing cliques within networks of N social actors. Cliques are subgroups of actors connected to one another through strong social relations.

Clique analysis is based on the premise that strong, intimate social relations fuse individual actors into a common whole characterized by high solidarity. Festinger et al. (1950:175) notes that ". . . the more cohesive the group, and the more active the process of communication, the greater

will be there effect on producing uniformity of attitudes, opinions, and behavior." The importance of social cliques is also highlighted by Homans' (1950) proposition that the more frequently individuals interact with one another, the stronger their sentiments of friendship.

Cliques are subgroups of actors that exhibit stronger, more cohesive social relations with one another than with other actors in the social system. Cliques are often defined as maximally complete subgraphs (Harary, 1969). This definition is based on Luce and Perry's (1949:97) definition of an absolute clique: "A subset of a group constitutes an absolute clique if it contains three or more members, if from each member of the subset there exists a relationship to every other member of the subset, and if the subset is maximal in that the addition of any other group member produces a violation of the previous condition." Given this definition, a clique is formed only when a subgroup of actors are connected to one another by mutual, maximum strength relations such that no additional actors can be added to the subgroup without losing the property of maximally strong social relations. This is a very restrictive criteria for the inclusion of social actors to a clique and is generally relaxed in practice. Thus, the minimum relation between any 2 actors in the clique is stronger than some arbitrarily defined criterion.

Knoke and Kuklinski (1982) describe a wide range of

alternative criteria for including social actors within a clique. One criterion that is frequently used is based on the idea of N-chains. An N-chain is "A sequence of n relationships each of which emanates from the person at which the previous relationship in the sequence terminates. . ." (Luce and Perry, 1949:98). Luce and Perry relax the criteria of maximally complete subgraphs by locating n-cliques. N-cliques are formed when there exists a chain of length n or less between every member of the subgroup and when the addition of any other actor results in chains greater in length than n.

Clique analysis is but one way in which the actors within networks can be differentiated into subgroups. The fourth type of network analysis described by Burt (1982a) is used to partition networks of N actors into subgroups based on the criterion of structural equivalence. Actors jointly occupy positions in the network to the extent that they exhibit similar relationships with all other system actors. Unlike subgroups defined by high degrees of social cohesion, the absence of social ties is as important as the presence of social ties. Following Burt's (1982a) typology, structurally equivalent subgroups are defined by a positional perspective.

Network models of structural equivalence seek to aggregate the N behavioral roles into K, $K < N$, structurally equivalent subgroups within the social system. Each of the K

subgroups perform distinct behavioral roles within the system, but the actors within each subgroup are presumed to be interchangeable with respect to the actions being studied. Lorrain and White (1971:63) state that ". . . a is structurally equivalent to b if a relates to every object x of C in exactly the same way as b does. From the point of view of the logic of the structure, then a and b are absolutely equivalent, they are substitutable."

Under a strong criterion of structural equivalence, two actors, i and j, are structurally equivalent only if they have identical patterns of relationships with the N-2 other actors in the social system. More formally, Burt (1982b) states that actors i and j are structurally equivalent under this strong criterion when the Euclidean distance between their network positions is zero. Knoke and Kuklinski (1982) note that measurement error and other factors make empirical network data less than perfectly reliable; thus, the strong criterion of structural equivalence is usually relaxed in the practice of research. Under a less restrictive criterion of structural equivalence, two actors i and j are structurally equivalent when the Euclidean distance between their respective network positions is less than some arbitrarily defined criteria.

Two analytic approaches are frequently used to uncover structurally equivalent network subgroups. Burt (1976, 1980a,

1982a, 1982b) advocates the use of continuous distance to operationalize structural equivalence. The continuous distance approach assumes that the distance between pairs of actors is measurable in terms of the dissimilarity in their relations with all other actors in the social system (Knoke and Kuklinski, 1982). With this approach, two actors i and j with very similar patterns of relationship with the N-2 other actors in the system will exhibit little distance between their respective positions. Two actors with dissimilar patterns of relations with the other N-2 actors in the system will exhibit high distance. The distance between two actors, i and j, is conceptualized in Euclidean terms as

$$d_{ij} = d_{ji} = \left[\sum_{q=1}^{N} (z_{jq}-z_{iq})^2 + \sum_{q=1}^{N} (z_{qj}-z_{qi})^2 \right]^{\frac{1}{2}} \qquad (1)$$

where $(z_{iq}-z_{jq})$ is the difference between two actors in the relations they initiate with q and $(z_{qi}-z_{qj})$ is the difference between actors in the relations received from q.

The Euclidean distances between all pairs of actors in the social system can be arrayed as an (N,N) symmetric matrix. Burt (1976, 1980a, 1982a, 1982b) advocates the application of agglomerative-hierarchical cluster analysis to the matrix of Euclidean distances. Agglomerative-hierarchical cluster analysis begins by treating each object as distinct and at each step classifies them into homogeneous

groups (Bailey, 1975). At step 1, each object is treated as its own cluster. At step 2, those objects meeting some criteria of homogeneity are classified into a distinct cluster. The process continues until all objects are grouped into one cluster.

The second approach to the operationalization of struc-structural equivalence within social networks relies on discrete distance and is often referred to as blockmodeling (White et al., 1976; Boorman and White, 1976). Breiger et al. (1975) describes blockmodeling as a clustering algorithm for use with relational data. The most frequently used block-modeling algorithm is referred to as CONCOR. Schwartz (1977) presents an in depth comparison of the CONCOR algorithm with principal components analysis applied to sociometric data. He concludes that the CONCOR algorithm is an unvalidated procedure that yields the same empirical results as are obtained with the first principal component. Nevertheless, the CONCOR algorithm is frequently used and, according to Arabie and Boorman (1982), provides empirically useful descriptions of relational data.

Blockmodeling begins with the entire system of N actors and at each step divides the system into maximally homogeneous subgroups of actors. At step 1, the system of N actors is divided into two subgroups. If greater refinement is desired, each subgroup can be submitted to the CONCOR algorithm. This

process continues until an empirically meaningful categorization of actors is achieved.

The fifth type of network model discussed by Burt (1982a) seeks to describe the entire social system from a relational perspective. These models often focus on network density and transitivity. Network density refers to the degree to which the actors within a network are connected to one another on the average. Models of transitivity focus on the relations among all possible triads within the system. For example, a triad census can be used to determine the degree to which the actors within the social system conform to Heider's (1958) balance hypothesis. These models have been most frequently used to test hypotheses concerning the social psychological processes occurring with the social system.

The sixth type of network model discussed by Burt (1982a) is used to describe the extent to which the network as a whole is hierarchical or centralized. These models utilize a positional perspective to analyze entire social systems. A system has a hierarchical structure to the extent that a single actor has high prestige. Thus, to the extent that a single actor is the object of strong relations from the other actors, the system is hierarchical (Burt, 1982a). The social system is centralized to the extent that a single actor is involved in all relations. Models of network centrality and network hierarchy both describe the extent to which the system

is characterized by unequal social relations.

The Problem of Boundary Specification

A problem for network analysts is to specify the boundaries of the social systems they are interested in studying. Laumann et al. (1982) distinguish two broad approaches to the problem of boundary specification. The first, termed the realist strategy, defines clear network boundaries and assumes that the social system exists as a collectively shared subjective awareness of the actors who are members of the system. This position is tenable in studies of clearly defined groups, such as members of academic departments, students within classrooms, or members of formal organizations. Yet, many systems of organized activity that are characterized by relatively enduring patterns of social relationships lack clearly definable boundaries.

Therefore, Laumann et al. (1982) contrast the realist strategy of defining networks with the nominalist strategy, in which the analyst imposes an analytic framework to serve theoretical purposes. Using a nominalist strategy, social systems are empirically defined on the basis of the actors attributes or reputations (Laumann et al., 1982). A commonly used approach to empirically define social systems is snowball sampling. Using snowball sampling, knowledgeable informants

are located and asked to indicate other actors who perform important roles in the social system (Coleman, 1958; Erickson, 1979).

The nominalist strategy of specifying system boundaries is highly consistent with social field theory and will be used in the present study of community action. Because the boundaries of social fields cannot easily be delimited, they must be identified on the basis of the content of relationships among elements. The community field is conceptually defined as an important social field through which a broad range of community action is coordinated. The present study empirically locates this structure through the use of snowball sampling techniques that identify prominent actors in local issues. Following Wilkinson's (1970a) description of social fields, this structure is presumed to be unbounded but identifiable through a core of field relevant activities.

Leadership Influence in the Structure of Community Action

Influence and leadership processes within the community action structure serve as important determinants of the manner in which local events and issues will be resolved. It has commonly been noted that the capacity of actors to determine the direction of social change is not randomly distributed among the residents of any local society. Indeed, only a

limited number of individuals typically play active roles in the crucial decision-making processes that determine the direction of community change. Therefore, the study of community influence or leadership structures becomes a critical concern for community development practitioners and theorists.

The purpose here is not to provide a comprehensive review of literature related to community power. Instead, the much more modest goal is to present a conceptualization of leadership as a relational property that exists within the structure of purposive local action. Leadership activity in the community field is presumed to be expressed through social relationships among system actors. The model of leadership developed here assumes that actors' positions in the structure of social relations constrains or facilitates their ability to exercise control over purposive change activities.

Power and leadership are multifaceted concepts that have received a great deal of attention in the study of community. Power is usually defined as the capacity to control the behavior of others. An individual is said to possess power when he or she can achieve compliance from others with respect to the disposition of a given value (Hawley and Wirt, 1974). Weber (1947:152) defined power as ". . . the probability that one actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the

basis on which this probability rests." As Liebert and Imershein (1977) point out, the study of community power and leadership has become an eclectic field of inquiry that recently has taken many new directions.

Field theorists are more concerned with leadership processes than power processes. Community leadership is closely related to power and involves the application of power. Leadership, from a field perspective, is conceptualized as the exercise of power to obtain desired goals and objectives within systems of goal-directed social action. From a field perspective, leadership is viewed as an integral component of the action process itself.

Kaufman and Bluhm (1976) suggest that actions that contribute to the attainment of goals or to structural maintenance of the social field provide leadership. Those individuals who display considerable activity in events and issues are presumed to be the persons of influence and constitute the community's leadership structure. Thus, from a field perspective, leadership can be observed in the actual occurrence of behavioral roles that contribute to task accomplishment or to group maintenance (Wilkinson, 1970b). Whereas, power exists in the potential to control events, leadership exists in social action.

The distinction between development in the community and

development of the community (Stinson, 1979), is closely related to the types of leadership roles performed. Development in the community is oriented towards the accomplishment of specific tasks and goals. The primary leadership roles are instrumental in nature (Cartwright and Zander, 1968). Beaulieu (1977) refers to instrumental leadership roles as program-oriented. He notes that actors are program-oriented to the extent that their activity is directed towards the accomplishment of specific tasks within special interest sectors of the local society. Leadership roles that contribute to the maintenance of group structure are expressive in nature (Cartwright and Zander, 1968). Within the community action structure, expressive roles are described as community-oriented (Beaulieu, 1977). Community-oriented leadership involves activity in multiple issues representing diverse institutional interest areas.

The distinction between program-oriented and community-oriented leadership illuminates the multi-interest nature of the community field. While this distinction is a useful orienting conceptualization, it artificially dichotomizes the nature of community leadership. More specifically, this dichotomy ignores the complex dependency relations that exist within the local society and thus, fails to specify the manner in which instrumental leadership within interest areas can

contribute to structural maintenance and, conversely, how expressive leadership roles can contribute to task accomplishment within institutional interest areas.

Burt (1977) argues that there are three sources of power in a network of social relations. First, power differences can be traced to different levels of control over generalizable resources that can be used to solve a wide range of problems or accomplish diverse goals. Second, power differences arise because social actors have differential proximity to those having direct control over such generalizable resources. And third, power differentials can be traced to the different levels of influence that the actors within a system have on one another. Marsdan (1982) points out that these last two sources of power are of special interest to network analysis because they are directly derived from the structure of relationships among social actors.

A model of leadership in community fields

The model of community leadership developed here closely follows Emerson's (1962) discussion of power-dependency relations and Coleman's (1973) model of collective action. A basic premise of Coleman's model is that power is not an attribute of individual actors but is a structural property that emerges from the relations among social actors. To say that actor i has power is meaningless unless we specify who

i has power over. The model developed here asserts that dependency relationships serve as an important structure through which community leadership is expressed (Marsdan, 1983; Marsdan and Laumann, 1977).

Emerson (1962), in his widely cited discussion of power-dependence relations, defined power as the inverse of dependence. That is, the power of actor i over actor j is equal to the dependency of actor j on actor i. According to Emerson (1962), dependency relationships develop through two factors. First, actor j's dependency on actor i increases as j's motivational investment in events or activities controlled by i increases. Therefore, the more interest an actor has in an event, the more dependent that person will be on actors who exercise control over that event. Second, j's dependency on i increases as the number of alternative sources available to j for desired outcomes that are controlled by i decreases. It is the first factor that is presumed to define dependency relations in the present model of community leadership.

Emerson's model of power-dependency relations is closely related with Coleman's (1973, 1977) model of collective action, which is directly generalizable to the study of leadership within community fields. Coleman's model is based on the concepts of interest and control. Coleman begins with the identification of a system of action comprised of N actors and M events. The N actors are differentially affected by the

events and thus are presumed to have different levels of interest in the M events. In addition, control over the M events is presumed to reside among the N actors within the social system but control over each event is presumed to be differentially distributed among the N actors. Dependency relationships among the actors and events emerge when events of interest to actors are at least partially under the control of other actors in the system.

From a community field perspective, the action structure is viewed as a system of N actors who perform behavioral roles in M institutional interest areas. In the system of action, actors are thought to express their interest in special interest fields through their participation. Special interest actors (those who participate in only 1 interest area) are presumed to express a high level of interest in that area. Those actors who participate in multiple interest areas, on the other hand, are presumed to have diverse interests that transcend the boundaries of institutional interest sectors to the locality as a whole.

Control over each institutional interest area is dispersed among the actors who perform active leadership roles in that area. Actors are thought to exercise control over the interest area to the extent that they occupy prominent leadership positions the institutional field. Dependency

relationships among the N actors in the community action structure emerge when actors perform leadership roles in institutional interest fields that are partially controlled by other actors in the system.

Unlike previous discussions of leaders' contributions to the community field structure (Wilkinson, 1974), the present model recognizes and incorporates the notion that actors who participate in only one interest sector contribute to the action structure as a whole. They do so through the mechanism of dependency relationships. An actor who exercises a high degree of control over one interest area contributes to the community field structure to the extent that system actors representing other institutional interest areas are dependent upon that person for the accomplishment of goals and objectives in areas in which they express interest through participation. Actors who participate in multiple interest fields may or may not exercise high levels of control over any of the interest fields in which they participate. But, because they exhibit a multi-interest focus, their dependency on the actors who control any one interest area is limited. Thus, actors who participate in multiple interest areas but who exercise relatively little control over interest areas contribute to the community field structure through their participation in cross-cutting issues.

In summary, expressing leadership as participation in a

network of M activities or events provides a succinct, powerful, and yet simple way to conceptualize community leadership. Those individuals who participate in multiple spheres of goal-directed activity are presumed to have diverse interests that transcend existing institutional boundaries. Because of their multi-interest focus, such actors are thought to experience lower levels of dependence on others within the action system, all else equal. Actors who exercise a high degree of control over single interest areas contribute to the community field through the dependencies of others upon them.

METHODS OF DATA COLLECTION AND INTEREST FIELD IDENTIFICATION

During the Fall of 1981, the Department of Sociology and Anthropology at Iowa State University conducted a case study of citizen participation in episodes of community action. The study was conducted in a community located in central Iowa. Hereafter, the pseudonym Center City will be used to refer to this community. While Center City serves as an agricultural trade center, it is also characterized by a relatively large and diverse industrial sector. In fact, during the course of data collection, many residents voluntarily added that relations between labor and management in Center City have traditionally been characterized by a relatively high degree of tension.

The primary purpose of the study was to identify and measure the interaction structures through which residents participate in local issues and events. Based on the social field perspective, the structure of goal directed social action is presumed to emerge through the actions of local residents as they pursue desired goals and objectives. Given this objective, an inductive data collection strategy, specifically snowball sampling (Coleman, 1958; Erickson, 1979), was used to identify the core set of actors who performed prominent roles in community action. The data col-

lection technique employed here is based on procedures used by Freeman (1968) to study leadership in Syracuse, New York.

Identifying Issues

The first step in data collection was to identify and interview community "Knowledgeables". Community knowledgeables were selected on the basis of their perceived knowledge of Center City in general, and their representation of a broad range of local status positions. Knowledgeables included the current mayor, the former mayor, a newspaper editor, a representative from the local Chamber of Commerce, a bank president, the president of a local labor union, a career "volunteer" who is active in a broad range of local issues, a housewife-mother-student with close ties to health care, the chief executive officer of a home for the aged, and a financial officer who was an active participant in a community needs assessment survey.

Based on in-depth interviews, these 10 knowledgeables identified community issues, events and projects that had received large amounts of local attention over the past three years. (Hereafter, the term issues will be used to refer to these community activities.) A three year period was chosen to allow for a relatively large number of issues without exacerbating the problem of recall error. Issues mentioned by two or more knowledgeables were selected for additional study.

Seventeen issues were identified based on this criterion (Table 2). Here, the nature of each issue is briefly described.

Issue 1 - Extension of the airport runway

This involved the acquisition of land to extend the runway at the Center City airport. Prior to the runway extension, the types of planes that could land at the airport were quite restricted. The runaway extension made it possible for corporate jets to use the facilities and was completed prior to data collection.

Issue 2 - Quality of sewage treatment

The quality of sewage effluent emitted by some industries in Center City failed to meet the ammonia level standards set by the State Department of Environmental Quality. Upgrading the sewage treatment facilities to meet state standards was projected to cost the city several million dollars and could have forced the closure of local industry. At the time interviews were conducted, the problem had temporarily been resolved through negotiations between Center City residents and state officials. Several respondents voiced concern that the issue would re-emerge.

Table 2. Seventeen issues for Center City study

Issue 1.	Extension of Airport Runway
Issue 2.	Quality of Sewage Treatment
Issue 3.	Crosstown Boulevard Development/Improvement of Surface Transportation
Issue 4.	Development of Recreational Facilities
Issue 5.	Fire Safety Code Inspections
Issue 6.	Swimming Pool at Pleasant Hills School
Issue 7.	Student Walkout at High School/Committee for Resolution
Issue 8.	Defeat of Bond Issue for Auditorium at School
Issue 9.	Pride Days Committee
Issue 10.	Efforts to Improve Labor-Management Relations/ Labor-Management Relations Committee
Issue 11.	Skatetown Rezoning Request
Issue 12.	Jobs for Center City Committee
Issue 13.	Community Relations Committee
Issue 14.	Congregate Meals Program/Meals on Wheels
Issue 15.	Raising Money for Police Dog/Crime Committee
Issue 16.	Lack of Industrial Space/Speculative Building Projects
Issue 17.	Charging Arts Association Rent on Space in Johnson Building

Issue 3 - Crosstown boulevard development

Knowledgeables referred to this issue as the plan to improve surface transportation in the community. Center City was characterized by numerous railroad crossings that severely restricted inner city traffic flow. The plan included the construction of four viaducts and the rerouting of traffic. At the time of data collection, one viaduct had been completed and another was under construction.

Issue 4 - Development of recreational facilities

The development of recreational facilities included the construction and remodeling of baseball and softball diamonds. The installation of night lighting at existing facilities was included in the proposal. At the time data were collected, night lighting had been installed at existing softball diamonds and a facility with four separate softball diamonds was under construction.

Issue 5 - Fire safety code inspections

When the local fire safety inspector started to force compliance with a strict local fire safety code, these inspections emerged as a local issue. The local fire safety ordinance was much more restrictive than the Iowa fire safety code. Several existing buildings were determined to require extensive design changes under the local code even though they met state safety standards. Landlords and business interests

strongly opposed the enforcement of local codes. At the time interviews were completed, the local fire safety code was under study and the Iowa fire safety code was being enforced.

Issue 6 - Swimming pool at Pleasant Hills school

This issue included actions to build a swimming pool at a school serving handicapped children. At the time of the interviews, the swimming pool had not been constructed but fund raising activities were under way.

Issue 7 - Student walkout at the high school

Many students walked out of the public high school when they perceived that basketball players were receiving special treatment. This event focused attention on long smoldering feelings that too much emphasis had been given to athletics. A committee of local residents was formed to resolve the problem. Committee members functioned as ombudsmen through which complaints could be channeled and investigated. At the time of data collection, the issue had been resolved and the committee was no longer meeting.

Issue 8 - Bond issue for a school auditorium

This involved an attempt to build an addition to the school that would increase space for arts activities. The addition would also provide some classroom space. At the time interviews were completed, the bond issue had twice been

defeated.

Issue 9 - Pride Days Committee

The Pride Days Committee included individuals who participated in planning Pride Days Activities. Pride Days is a Center City celebration that involves a diverse range of activities. The goal of Pride Days activities is to stimulate pride among Center City residents. A day long Pride Days celebration had been held during the summer just prior to data collection and respondents reported that similar activities would again be held the following year.

Issue 10 - Efforts to improve labor-management relations

This was a relatively new program at the time interviews were conducted. Center City has long been characterized by tension between labor and management. There was a recognized need to bring representatives of labor and management together to discuss problems and work for common community goals. A committee that included representatives of both labor and management had been formed just prior to data collection. Evidence of tangible results was not available at the time interviews were conducted, however, the committee remained active.

Issue 11 - Skatetown re-zoning request

The owner of a local roller skating rink wanted to expand operations but the land required for the expansion was not zoned for commercial purposes. Most business leaders supported the requested zoning change but the Planning and Zoning Board was initially opposed. The issue generated relatively high levels of controversy when the owner threatened to take the business out of town. The Planning and Zoning Board reversed their initial decision after much public pressure was exerted.

Issue 12 - Jobs for Center City committee

This involved the formation of a group of residents actively seeking to create jobs by attracting new industry to Center City. The committee was formed under the auspices of the Chamber of Commerce and included representatives from local management and labor. At the time interviews were conducted, the committee was in the process of developing strategies to increase job opportunities in Center City.

Issue 13 - Community Relations Committee

The Community Relations Committee was formed to foster improved relations among diverse groups within the community; to improve citizen understanding of local issues; and to provide a forum for discussing and identifying community

objectives. The committee's efforts culminated in a community needs assessment survey that was completed prior to data collection.

Issue 15 - Congregate meals program

Although labeled the congregate meals program, this involved the development of two related meals programs for the elderly. One involved delivery of meals to the homes of elderly, while the second involved the establishment of a meals program where elderly could congregate. Both programs were operational at the time of data collection.

Issue 16 - Lack of industrial space

Center City was perceived as having few adequate buildings available for industrial development. Many residents felt that industry could be attracted if attractive space was provided for new development. At the time interviews were completed, one such speculative building was under construction.

Issue 17 - Charging the Arts Association rent

This issue emerged when the Arts Association was asked to pay rent on the space it occupied in a building that was built with funds donated by a local family. The family has traditionally been a strong supporter of the arts. The building houses the Chamber of Commerce, the Arts Association

and other offices. The city paid upkeep on the building and contended that the Arts Association would be required to pay rent on the space it occupied. At the time interviews were completed, the Arts Association was being charged rent.

Generating the Sample of Respondents

Once issues were identified, knowledgeables were asked to name local residents who played a critical role in determining the outcome of the issue or event. Residents mentioned by two or more knowledgeables as critical actors in an issue were defined as issue authorities. This procedure lead to the identification of 54 authorities for the 17 issues. Three of the 54 authorities refused to participate in subsequent interviews and four could not be contacted because they had moved out of Center City.

Interviews with the remaining 47 issue authorities were conducted using structured questionnaires. (The interview schedule is included as Appendix A.) Each authority was asked to indicate which of the 17 issues they were actively involved in. Because in-depth information on issue involvement was collected during the interviews, a limit was placed on the number of issues discussed. Authorities indicating involvement in more than five issues were asked to identify those five in which they were most actively involved. Information

concerning the nature of authorities' participation and their relationships with other prominent issue actors was collected only for the five issues identified by the respondent as most important.

Authorities were then asked to identify other actors who performed critical roles in each of the issues (at most five) where they indicated active involvement. Individuals not listed as authorities, but who received two or more citations from authorities as active participants in an issue were defined as first level influentials. Individuals identified as first level influentials were added to the sample and subsequently, interviewed. As was the case for issue authorities, first level influentials were asked to identify the issues in which they were actively involved. Again, if more than five issues were mentioned, the respondent was asked to provide detailed information only for the five in which participation was most active. Individuals nominated by one authority and one or more first level influentials were also defined as first level influentials and included in the sample. The snowball sampling process continued until no additional first level influentials were identified. A total of 169 individuals were identified as participants in the 17 issues.

To summarize, the sample was based solely on the pattern

of issue nominations. Individuals cited by at least two of the 10 knowledgeables were defined as issue authorities. Individuals cited by at least two authorities were defined as first level influentials. In addition, individuals cited by at least one issue authority and one or more first level influentials were also defined as first level influentials and included in the sample. The purpose of the sampling procedure was to identify the population of authorities and first level influentials. In effect, the boundaries of the action system were nominally defined by the procedures adopted.

Initial inclusion in the sample did not require the identified authorities or first level influentials to acknowledge self-involvement in any issue. Following Freeman's (1968) procedure, the additional criteria of self-acknowledged participation was used to determine if the actor was a valid participant in the issue. Actors not acknowledging self-involvement in issues, even after receiving the minimum number of nominations, were excluded from subsequent analysis. Based on the criteria of self-acknowledgement, 17 actors were eliminated from further analysis. This reduced the total pool of valid issue participants to 152.

Other exceptions were as follows: Ten individuals were excluded because they no longer lived in Center City; one was

on an extended vacation; four were in high school; and nine individuals who should have been interviewed were excluded because of bookkeeping errors made at the time interviewing took place. Altogether, 24 of the 152 potential participants in the study were excluded, reducing the sample size to 128. Of these, eight refused to participate, resulting in a final sample size of 120. The rate of participation is estimated as 78.9% (120 out of 152).

The selection of actors also effected the number of issues included in further analysis. The criterion that actors needed to receive at least one nomination from an authority was not met in two issues (issue 3 and issue 6). This occurred because the authorities identified by the knowledgeables failed to cite one another as active participants. Issue 12 was also eliminated because two of the four identified authorities acknowledged self-involvement but failed to list that issue as one of the five in which they were most actively involved. Because these two authorities did not provide information, the final set of identified issue participants is potentially biased. Therefore, issue 12 was also excluded. Subsequent analysis is based on 14 of the original 17 issues.

The number of actors identified ranged from five in issues 4 and 14, to 19 in issue 7. The distribution of

respondents' participation in the issues is presented in Table 3.

Operationalizing Interest Fields

Each of these 14 issues can be treated and analyzed as a separate episode of goal directed action. From a community field perspective, however, attention is directed to activity within and among institutional interest spheres. This involves an inductive process of classifying issues according to their institutional orientation. Using Wilkinson's (1974) classification scheme as a basis, the fourteen issues were grouped into eight interest fields according to their content of relations.

The content of relations in Issues 1 (extension of the airport runway), 10 (efforts to improve labor-management relations) and 16 (lack of industrial space) were classified as representing the Industrialization field. An externally induced activity field is defined by Issue 2 (the quality of sewage treatment). The content of relations in Issue 4 (development of recreational facilities) defines a recreation field. Issues 5 (fire safety code inspections), 11 (skate-town rezoning request) and 17 (charging the Arts Association rent) define a local government affairs field. An education field is defined by Issues 7 (student walkout at the high school) and 8 (defeat of a bond issue for a new auditorium

Table 3. Number of authorities and first level influentials by issue

Issue	Number of authorities	Number of first level influentials	TOTAL
1	4	11	15
2	4	6	10
3[a]	-	-	-
4	3	2	5
5	3	14	17
6[a]	-	-	-
7	7	12	19
8	4	13	17
9	4	13	17
10	7	1	8
11	4	6	10
12[a]	-	-	-
13	4	9	13
14	3	2	5
15	2	4	6
16	3	6	9
17	3	4	7

[a]Excluded from additional analysis.

at the school). A general community development and planning field is defined by Issue 9 (Pride Days Committee) and Issue 13 (Community Relations Committee). Issue 14 (congregate meals program for the elderly) defines a social service field. And a fund raising field is defined by Issue 15 (raising money to purchase a police dog). The classification of issues into interest fields is summarized in Table 4 and the distribution of respondents' participation in the identified interest fields is presented in Table 5. The participation of Center City residents in these eight special interest fields provide the basic data from which important structural characteristics of the community field are observed.

Table 4. Interest fields for Center City issues

Interest field	Issue
Industrialization	Issue 1. Extension of Airport Runway
	Issue 10. Efforts to Improve Labor-Management Relations
	Issue 16. Lack of Industrial Space
Externally Induced Activities	Issue 2. Quality of Sewage Treatment
Recreation	Issue 4. Development of Recreational Facilities
Local Government Affairs	Issue 5. Fire Safety Code Inspections
	Issue 11. Skatetown Rezoning Request
	Issue 17. Charging Arts Association Rent on Space in Johnson Building
Education	Issue 7. Student Walkout at High School
	Issue 8. Defeat of Bond Issue for Auditorium at School
General Community Development and Planning	Issue 9. Pride Days Committee
	Issue 13. Community Relations Committee
Social Service	Issue 14. Congregate Meals Program
Fund Raising	Issue 15. Raising Money for Police Dog

Table 5. Distribution of respondents' participation in special interest fields

Interest field	Number of active participants
1. Industrialization	30
2. Externally Induced Activities	10
3. Recreation	5
4. Local Government Affairs	32
5. Education	30
6. General Community Development and Planning	29
7. Social Service	5
8. Fund Raising	6

ANALYSIS AND FINDINGS

One question of concern to community field theorists is the degree to which local activity is coordinated across special interest fields. Individuals working together to pursue common objectives are presumed to be an important mechanism through which the coordination of local action occurs. The structure through which this coordinating process occurs can be studied in terms of actors' joint participation in multiple special-interest fields.

The Nature of Joint Participation Data

Joint involvement in special fields is used as a measure of relational form among local actors in Center City. The strength of the relationship between actors i and j is determined by the number of special interest fields in which both participate. Similarly, the number of actors that interest fields have in common is used to measure relational form among the special interest fields in Center City. In this case, the strength of the relationship between interest fields i and j is the number of actors who participate in both spheres of activity.

This discussion of networks of joint participation closely follows the work of Breiger (1974) and Burt (1982a). To illustrate, begin with a social system composed of N actors and M activities. The activities included in this example are

the eight institutional interest fields observed in Center City. The relations among actors and the relations among special interest fields are implied by a matrix, call it A, of order (N,M). Each element of A, a_{ij} equals 1 if actor i participates in interest field j and 0 otherwise. Table 6 illustrates the action structure of Center City based on 10 of the 120 actors in the sample. (The entire A matrix representing the participation of residents in special

Table 6. Participation of Center City actors in 8 special interest fields

Actor	Interest field								Row marginal
	#1	#2	#3	#4	#5	#6	#7	#8	
Actor 1	0	0	0	0	0	0	1	0	1
Actor 2	0	0	0	0	0	0	1	0	1
Actor 3	0	0	0	1	0	0	1	0	2
Actor 4	0	0	0	1	0	0	0	0	1
Actor 5	0	0	0	1	0	0	0	0	1
Actor 6	0	0	1	1	0	0	0	0	2
Actor 7	1	1	1	1	0	1	0	0	5
Actor 8	0	0	0	0	0	1	0	0	1
Actor 9	1	0	0	0	0	1	0	0	2
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
Actor 120	1	1	0	1	0	1	0	0	4
Column Margin	30	10	5	32	30	29	5	6	147

interest fields for Center City is presented in Appendix B.)

The data presented in Table 6 illustrate the diversity of information provided in matrix A. Actors 1 and 2 participate only in interest field 7 (social services); actor 3 participates in interest areas 3 (recreation) and 7 (social services); actor 7 participates in five special interest fields; actor 120 participates in four interest fields; and so on. Thus, the number of interest fields in which each actor is identified as an active participant is given as the row margin.

Individual actors serve as linkages between diverse spheres of goal directed activity and it is precisely such linkages that are presumed to provide local coordination. Actors participating in only one interest field perform leadership roles in that interest area, but do not directly link interest areas to others.

The column marginals indicate the number of actors that participate in each interest field. In Center City, 30 actors participate in interest field 1 (industrialization), 10 in interest field 2 (externally induced issues), five in interest field 3 (recreation), and so on.

Matrix A (Table 6), representing the joint participation of N actors in M local interest fields, presents a straight forward way to represent community field structures. Simple

manipulations of matrix A provide additional information about the structure of local action.

First, relationships between individual social actors can be represented as a matrix of order (N,N), given as

$$P = AA'. \qquad (2)$$

For Center City, P is a symmetrical matrix of order (120,120). The entries on the main diagonal, p_{ii}, give the number of special interest fields in which actor i is a participant. The off diagonal elements of matrix P, p_{ij}, indicate the number of special interest fields in which actors i and j are both identified as active participants.

Of greater substantive value when studying the structure of community action, the linkages among special interest fields are represented as an (M,M) matrix given as

$$G = A'A. \qquad (3)$$

The diagonal elements of G, g_{ii}, represent the number of actors participating in interest i. The off diagonal elements of G, g_{ij}, indicate the number of actors that participate in both interest areas i and j. Matrix G is of special interest to community field theorists because it represents the number of structural linkages among institutional interest fields. The G matrix for Center City is presented in Table 7.

Table 7. Pattern of participation in eight special interest fields

Interest field	Interest field #1	#2	#3	#4	#5	#6	#7	#8
#1	30							
#2	5	10						
#3	1	1	5					
#4	5	3	2	32				
#5	4	1	0	2	30			
#6	5	2	1	3	4	29		
#7	0	0	0	1	0	0	5	
#8	0	0	0	0	0	0	0	6

In Center City, five actors identified as active participants in interest field 1 (industrialization) also participated in interest field 2 (externally induced activity). Participants in interest field 1 also tended to be involved in interest fields 4 (local government affairs), 5 (education), and 6 (general community development and planning). Interest field 7 (social services) is structurally linked only with interest field 4 (local government affairs). Interest field 8 (fund raising) is structurally isolated from other interest fields in Center City.

Although the information provided in Table 7 gives the

number of structural linkages between special interest fields, it does not indicate the relative strength of coordinative ties between the fields. A strategy that accounts for the number of actors identified as participants in each special interest field is required to compare the relative strength of coordinative linkages between fields.

Analyzing coordination between interest fields

A simple technique to measure the strength of coordinative linkages between interest fields is the relative density of joint participation of individuals in both fields. Similar density measures have frequently been used to assess the strength of linkages between structurally equivalent subgroups (Knoke and Kuklinski, 1982). In this study, the technique is used to examine the strength of linkages between special interest fields. The density of coordinative ties between special interest fields is given as

$$t_{ij} = n_{ij}/(n_i+n_j), \qquad (4)$$

where t_{ij} is the density of joint participation between two interest fields i and j, n_{ij} is the number of actors who participate in both interest field i and interest field j, n_i is the number of actors who participate in interest field i, and n_j is the number of actors who participate in interest field j. Interfield densities are presented as a symmetric

matrix of order (M,M) (Table 8).

Table 8. Density of joint participation in eight special interest fields

Interest field	Interest field #1	#2	#3	#4	#5	#6	#7	#8
#1	-							
#2	.125	-						
#3	.029	.067	-					
#4	.081	.071	.054	-				
#5	.067	.025	.000	.032	-			
#6	.085	.051	.029	.049	.067	-		
#7	.000	.000	.000	.027	.000	.000	-	
#8	.000	.000	.000	.000	.000	.000	.000	-

Interest areas 1 (industrialization) and 2 (externally induced activities) exhibit the strongest coordinative linkage to one another. The density of joint participation between interest areas 1 and 2 is .125. This means that 12.5% of all actors who participated in either interest field 1 or interest field 2, participated in both. The density measures also indicate relatively strong coordinative linkages between interest area 1 and interest areas 4 (local government affairs), 5 (education), and 6 (general community development

and planning). The coordinative linkage between interest fields 1 and 3 (recreation) is weaker, with a joint participation density of .029.

In addition to the very strong linkage with interest area 1, interest field 2 (externally induced activities) exhibits relatively strong coordinative linkages with interest fields 3 (recreation) and 4 (local government affairs). The coordinative linkage between interest fields 2 and 6 (general community development and planning) is more moderate. And the structural linkage between fields 2 and 5 (education) is weaker.

A moderately strong coordinative linkage exists between interest fields 3 (recreation) and 4 (local government affairs). Field 3 is less strongly connected to interest field 6 (general community development and planning).

The pattern of participation in interest fields 5 (local government affairs) and 6 (general community development and planning) exhibits a moderately strong coordinative linkage. A weaker coordinative linkage is observed between interest field 4 and interest fields 5 (education) and 7 (social service).

Interest fields 7 (social services) and 8 (fund raising) occupy peripheral positions in the structure of community action. Interest field 7 is weakly linked with interest field

4 (local government affairs) and not structurally linked with any of the other interest fields. Interest field 8 is completely disconnected since it exhibits no structural relationships with other special interest fields in the community action structure.

With the exception of the linkage between interest fields 3 and 5, interest fields 1, 2, 3, 4, 5, and 6 are all structurally linked to one another. In general, coordinative linkages among these six interest fields are relatively strong. Compare the average density of joint participation among these six interest fields (average density of joint participation = .055) with the average density of joint participation among all eight interest fields (average density of joint participation = .031). These six interest fields can be said to form a core of dense joint participation within the action structure of Center City.

The relative propensity of actors from one interest area to participate in other interest fields is also informative. This is calculated by dividing the total number of coordinative linkages exhibited by actors who participate in interest field i by the total number of actors in interest field i. The information to perform this calculation is presented in Table 7. The 30 actors who participate in interest field 1 exhibit 20 coordinative linkages with the other seven

interest fields. Thus, the relative propensity of actors who participate in interest field 1 to participate in other interest fields is .667 (Table 9).

Table 9. Relative propensity of actors in one interest field to participate in other interest fields

Interest field	Propensity of actors to participate in other interest areas
Field 1	0.667
Field 2	1.200
Field 3	1.000
Field 4	0.500
Field 5	0.300
Field 6	0.517
Field 7	0.200
Field 8	0.000

Actors identified as active participants in interest field 2 (externally induced activities) are the most likely to be identified as active participants in other interest fields. One might speculate that the nature of activity in interest area 2 tends to attract actors representing other interest areas. Interest area 2 involves local activities that are induced by forces external to the local society. Local

actors, especially those representing industrial and government interests, appear to be drawn together in common activities to resolve externally induced issues.

Participants in interest field 3 (recreation) also exhibit a comparatively high propensity to actively participate in other interest fields. Individuals identified as active participants in interest fields 7 (social services) and 8 (fund raising) are the least likely to be identified as participants in other special interest fields.

Measuring the Prominence of Leaders in Interest Fields

The interactional structure within each of the eight special interest fields in Center City can be represented as a sociomatrix. A sociomatrix, call it X, is a square matrix of order (N,N), where N is the number of actors (often referred to as nodes) in the system. In this study, the N actors are the individuals identified as active participants in each interest field. The relations among actors within the field are the elements of X, x_{ij}, where x_{ij} equals 1 if actor i cites actor j as an active participant in any issue within the institutional interest field, and 0 otherwise. In general, x_{ij} need not equal x_{ji} since actor i may nominate actor j as an active participant even though j does not nominate i. By convention, the elements on the main diagonal,

the x_{ii}, are set equal to 0. To illustrate, the sociomatrix representing social relations among the 10 Center City actors identified as participants in interest field 2 (externally induced activities) is shown (Figure 1). This interest field was chosen because the number of actors is not overly cumbersome when demonstrating the analytic technique.

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
A1	0	1	1	1	1	1	1	0	1	1
A2	1	0	1	0	0	0	0	1	1	1
A3	1	1	0	1	1	1	1	0	1	0
A4	1	0	1	0	0	0	0	0	1	1
A5	1	0	0	1	0	0	1	1	0	0
A6	1	0	0	0	1	0	0	0	1	0
A7	1	0	1	1	1	0	0	0	1	0
A8	0	1	1	0	0	0	0	0	1	1
A9	1	0	1	1	0	0	0	0	0	1
A10	1	0	1	1	0	0	0	0	0	0

Figure 1. Sociomatrix illustrating the pattern of social relations among the 10 Center City actors identified as participants in interest field 2

A value of 1 in matrix X means that actor i (the row actor) nominated actor j (the column actor) as an active participant in the externally induced activities field. Therefore, the row marginals of the sociomatrix, represented as x_{i+}, reflect the propensity of actors to nominate others as active participants in the interest field. Here, actor 1 cited eight others as active participants in field 2; actor 2 cited five others, and so on. The column marginals, x_{+j}, represent the actors propensity to be nominated by others as an active participant. For this example, actor 1 received eight nominations, actor 2 received three nominations, and so on.

The pattern of social relationships represented in each of the eight sociomatrices provides a straight forward strategy for measuring the prominence of leaders within special interest fields. Recall that leadership, from a social field perspective, is defined in terms of active participation in goal directed activities. Actors receiving many nominations as actors in special interest fields are highly visible members of those interactional spheres. Such actors are presumed to occupy positions of greater leadership prominence within the special interest field than less visible actors. Measures of position prestige based on the structural position of actors in the sociomatrix are used to operationalize leadership prominence within special interest fields

(Burt, 1982a; Knoke and Burt, 1982). The calculation of leadership prominence scores within special interest fields is an intermediate step in the measurement of leadership prominence in the community field.

One measure of leadership prominence in special interest fields uses the information from the column marginals but ignores indirect relationships among the actors.[1] This is given as

$$l_j = (x_{ij} + x_{2j} + \ldots + x_{nj})/x_{++}, \qquad (5)$$

where l_j is the leadership prominence of actor j, x_{ij} equals 1 if i nominates j, and 0 otherwise, and x_{++} is the total number of issue nominations within the field. Using this measure, an actors leadership prominence is measured as the proportion of all nominations in the field that are directed toward that actor.

While this measure uses information about the volume of nominations directed towards actors, it ignores completely the information available concerning the quality of the nominations. This measure is closely related to reputational measures of power (Hunter, 1953; Tait et al., 1978).

The measure of leadership prominence used in this study

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[1]The term social relationship can be used to refer to a wide range of relational content among the actors in a system (Knoke and Kuklinski, 1982). Here, the content of social relationships is the recognition of active interest field participation.

takes into account the prominence of actors making nominations as well as the number of nominations received. This is an important advantage and can be illustrated by considering two actors, i and j, each of whom are the object of the same number of nominations. Suppose that actor i receives nominations from actors who themselves occupy prominent positions in the special interest field, while actor j receives nominations from actors who occupy peripheral positions in the interest field. Equation 5 fails to consider such differences in the quality of nominations received.

An alternative technique is to weight nominations by the prominence of the actor initiating them. This approach presumes that the prominence of the source of nominations determines in part the prominence of the object of nominations. The nomination received by actor i from j contributes to i's leadership prominence in the special interest field to the extent that actor j is a prominent leader. This is given as

$$l_j = l_1 x_{ij} + l_2 x_{2j} + \ldots + l_n x_{nj} \; . \qquad (6)$$

Note that leadership prominence scores appear on both sides of Equation 6. Therefore, leadership contributions can be represented as a system of N equations and N unknowns. This is given in matrix form as

$$0 = L'(X+I), \qquad (7)$$

where L is a vector of N prestige scores, X is the matrix of

social relations, and I is the identity matrix (a square matrix of order (N,N) with 1's on the main diagonal) (Burt, 1982a; Knoke and Burt, 1982). Following Burt (1982a) and Hubbell (1965), each row of X is normalized such that $x_{i+} = 1.0$. This normalization is calculated by dividing each element of the row, x_{ij}, by the row marginal, x_{i+}. The normalized matrix X for interest field 2 is illustrated in Figure 2.

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
A1	.000	.125	.125	.125	.125	.125	.125	.000	.125	.125
A2	.200	.000	.200	.000	.000	.000	.000	.200	.200	.200
A3	.143	.143	.000	.143	.143	.143	.143	.000	.143	.000
A4	.250	.000	.250	.000	.000	.000	.000	.000	.250	.250
A5	.250	.000	.000	.250	.000	.000	.250	.250	.000	.000
A6	.333	.000	.000	.000	.333	.000	.000	.000	.333	.000
A7	.200	.000	.200	.200	.200	.000	.000	.000	.200	.000
A8	.000	.250	.250	.000	.000	.000	.000	.000	.250	.250
A9	.250	.000	.250	.250	.000	.000	.000	.000	.000	.250
A10	.333	.000	.333	.333	.000	.000	.000	.000	.000	.000

Figure 2. Normalized sociomatrix for interest field 2

Following this normalization, Equation 7 is the characteristic equation of matrix X (Burt, 1982a; Van de Geer, 1971). Leadership contribution scores for all actors in the interest field are calculated as the largest eigenvector of the normalized sociomatrix. In this study, an iterative algorithm described by Van de Geer (1971:273-276) and Merlin et al. (1977:256-258) is used to compute the largest eigenvector. Rubinstein (1970:216-217) provides a proof that this iterative procedure converges to the largest eigenvector.

The iterative procedure was chosen because it does not require nonsingularity of the X matrix. If any two actors in the sociomatrix are linearly dependent, the matrix will be singular. Singular matrices cannot be inverted, thus, eigenvector solutions requiring matrix inversion are not appropriate. The requirement that all actors be linearly independent presumes that no actors occupy structurally equivalent positions within the social system. Such a requirement is neither desirable nor reasonable.

Leadership prominence scores, calculated as the largest eigenvector of the normalized sociomatrix, and leadership prominence rankings for each of the eight special interest fields are presented in Tables 10 through 17. These scores are used to develop a structural measure of leadership prominence within the community field.

Table 10. Leadership prominence in interest field 1 - industrialization

Actor	Prominence score	Rank
7	0.002718	17
9	0.024569	12
10	0.028593	10
14	0.028208	11
15	0.035519	9
16	0.059256	7
17	0.010950	15
18	0.000620	26
19	0.002247	18
20	0.001764	19
21	0.020253	13
23	0.176236	1
43	0.005531	16
48	0.017699	14
65	0.059283	6
66	0.001526	21
67	0.001531	20
68	0.000696	24
69	0.000894	23
70	0.001264	22
71	0.000553	27
78	0.000425	29
80	0.052999	8
88	0.094556	4
89	0.000487	28
91	0.130056	3
98	0.000656	25
99	0.000369	30
119	0.153586	2
120	0.086955	5

Table 11. Leadership prominence in interest field 2 - externally induced activities

Actor	Prominence score	Rank
7	0.188290	1
16	0.047711	8
22	0.152498	2
44	0.149754	3
66	0.074454	6
67	0.045324	9
77	0.070147	7
90	0.009540	10
118	0.123808	5
120	0.138474	4

Table 12. Leadership prominence in interest field 3 - recreation

Actor	Prominence score	Rank
6	0.164840	3
7	0.217509	2
116	0.312595	1
117	0.152528	4
127	0.152528	4

Table 13. Leadership prominence in interest field 4 - local government affairs

Actor	Prominence score	Rank
3	0.020936	22
4	0.050361	4
5	0.112571	1
6	0.056016	3
7	0.016527	29
18	0.022830	19
23	0.033886	10
31	0.031079	12
42	0.042501	7
48	0.018115	24
50	0.011166	30
51	0.022689	20
52	0.030777	13
53	0.033670	11
54	0.020267	23
55	0.027133	15
56	0.010105	32
58	0.023812	18
59	0.016567	26
61	0.067725	3
63	0.025852	17
64	0.049494	5
74	0.015021	28
77	0.018088	25
79	0.028819	14
85	0.027032	16
86	0.010559	31
87	0.013045	29
96	0.022256	21
114	0.038888	8
117	0.035903	9
120	0.046318	6

Table 14. Leadership prominence in interest field 5 - education

Actor	Prominence score	Rank
10	0.017443	17
13	0.092282	2
16	0.006712	27
18	0.005709	30
28	0.011190	22
2-	0.060956	6
30	0.016710	18
34	0.031230	14
35	0.044732	10
36	0.008806	24
37	0.048130	8
46	0.055136	7
48	0.015496	20
49	0.042198	12
64	0.065785	4
72	0.016424	19
73	0.006936	26
75	0.077746	3
76	0.043851	11
81	0.008617	25
82	0.019966	16
83	0.031159	15
84	0.012637	21
94	0.064952	5
95	0.009854	23
101	0.045538	9
102	0.006649	28
105	0.033912	13
113	0.093369	1
115	0.005876	28

Table 15. Leadership prominence in interest field 6 - general community development and planning

Actor	Prominence score	Rank
7	0.026719	15
8	0.015079	24
9	0.044581	7
10	0.077695	2
11	0.041499	10
12	0.026437	16
24	0.075917	3
25	0.037784	12
26	0.042267	9
27	0.047280	6
28	0.033392	14
37	0.035646	13
38	0.022512	19
39	0.016483	23
40	0.025984	17
45	0.008819	27
47	0.021672	21
57	0.022107	20
60	0.022950	18
62	0.017995	22
100	0.009954	26
104	0.013663	25
106	0.016483	23
110	0.043933	8
111	0.079078	1
113	0.072938	4
115	0.054488	5
119	0.006932	28
120	0.039717	11

Table 16. Leadership prominence in interest area 7 - social services

Actor	Prominence score	Rank
1	0.250000	2
2	0.300000	1
3	0.100000	3
32	0.250000	2
116	0.100000	3

Table 17. Leadership prominence in issue field 8 - fund raising

Actor	Prominence score	Rank
33	0.134662	4
97	0.206971	1
107	0.141236	3
108	0.135662	4
109	0.175998	2
112	0.206971	1

Leadership Prominence in Community Fields

Community field theorists commonly distinguish actors who participate in single-interest areas from actors who participate in multiple-interest areas (Wilkinson, 1974; Beaulieu, 1977). Those actors who perform leadership roles in multiple-interest areas are presumed to contribute to the structural integrity of the community field, whereas, single-interest actors are not (Kaufman and Bluhm, 1976; Nix, 1970). This sharp distinction between single and multiple-interest actors ignores the indirect contributions that single-interest actors potentially make to the structure of the community field. Single-interest actors contribute to the community field structure when the interest field in which they participate is structurally linked with other local interest fields.

The extent to which single-interest actors contribute to the community field depends on two related factors. First, single-interest actors contribute to the community field to the extent that they exercise control in special interest fields. They also contribute to the community field structure to the degree that the special interest field in which they participate is structurally linked with other local interest fields. Therefore, the more control the actor exercises in the interest field and the stronger the structural linkages of the field to other interest fields, the greater is the

contribution of the actor to the community field. Leadership prominence in the community field, like leadership prominence within special interest fields, is conceptualized as a property of the actor's position in the local action structure.

The measure of leadership prominence developed in this study takes into account all direct and indirect relationships among the N actors identified as active participants in the community field. It accounts for the number of distinct interest fields in which actors participate (scope of involvement), their structural prominence within the special interest fields in which they participate, and the structural relationships that exist among the special interest fields in the locality.

The measure is based on Coleman's (1973, 1977) analysis of power in a system of N actors and M events or activities. Coleman's model of power in collective action relies on two basic concepts, interest and control. Coleman defines an actor's interest in an event as the proportion of variability in the actor's well-being that is related to the outcome of that event. Control is defined as the capacity of actors' to direct the outcomes in the event in ways coincidental with their interests (Coleman, 1973, 1977).

Coleman (1973, 1977) assumes that all actors have an equal interest in their own well-being. He also assumes that

actors' interests are differentially distributed across the M events in the system. Based on these assumptions, actor i's interest in the M events is constrained such that

$$\sum_{m=1} x_{im} = 1.0, \tag{8}$$

where x_{im} is the actor's interest in event m.

From a community field perspective, substantive interest is directed toward actors' behavioral roles in special interest fields, rather than their subjective interest in events. Thus, interest as developed in Coleman's model is expressed in terms of actors' behavioral participation in interest fields.

Unlike Coleman's model, the model developed in this study does not constrain the participation of actors in interest fields to be equal. Here, actors may participate in any number of interest fields. The method used in this study to identify the sample of active participants arbitrarily constrains actors' participation to five or fewer interest fields.

The participation of local actors in interest fields is represented as a (N,M) matrix A, where N is the number of actors and M is the number of special interest fields. The A matrix for 10 actors was described earlier in Table 6.

Following Coleman (1973, 1977), actor i's control over interest field M, symbolized as c_{im}, is subject to the constraint that

$$\sum_{i=1} C_{im} = 1.0 . \qquad (9)$$

This constraint specifies that the total control over an event is distributed among the participating actors as a proportion of total control. Within the context of community action, the control of events is assumed to be unequally dispersed among actors identified as participants in the field. Here, control over special interest fields is measured as the actor's leadership prominence within that field. Actors are presumed to have control over special interest fields to the extent that they occupy structurally prominent positions. The control of actors over special interest fields can be represented as a (N,M) matrix, C, where N is the number of actors and M is the number of special interest fields. The entire control matrix is given in Appendix C. Here, the control matrix will be illustrated for the same Center City actors shown in Table 6 (Table 18).

Because the total amount of control over each interest field is normalized to equal 1.0, the cell entries can be interpreted as the proportion of control in the interest field held by the actor (Table 18). Actors who do not participate in an interest field have no control in that interest area. Actor 1's control over interest field 7 (social services) is .25, actor 2's control over interest field 7 is .3, and so on.

Table 18. Actors' control in eight special interest fields (cell entries were rounded to 3 decimal places)

Actor	Interest field							
	#1	#2	#3	#4	#5	#6	#7	#8
1	.000	.000	.000	.000	.000	.000	.250	.000
2	.000	.000	.000	.000	.000	.000	.300	.000
3	.000	.000	.000	.021	.000	.000	.100	.000
4	.000	.000	.000	.050	.000	.000	.000	.000
5	.000	.000	.000	.113	.000	.000	.000	.000
6	.000	.000	.165	.056	.000	.000	.000	.000
7	.003	.188	.218	.017	.000	.027	.000	.000
8	.000	.000	.000	.000	.000	.015	.000	.000
9	.025	.000	.000	.000	.000	.017	.000	.000
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
120	.087	.138	.000	.047	.000	.040	.000	.000
TOTAL	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

When actors participate in institutional interest fields in which they have little control, they exhibit dependence on actors having greater control[2] (Coleman, 1973, 1977; Emerson,

[2]The term dependence relationship is used to remain consistent with earlier usage. As used here, dependency relationships do not imply either a psychological dependence or an objective dependence of one actor on another. Instead, the behavior of actors participating in interest fields in which they have little control is presumed to be subject to the control of others.

1962; Marsdan, 1982). The greater the degree of control that actor j has in the interest fields in which actor i participates, the greater the dependency of i on j. Similarly, j is dependent on i to the extent that j participates in interest fields controlled by i. Thus, actors i and j are mutually dependent on one another, but the dependence of i on j is not necessarily equal to the dependence of j on i.

From a community field perspective, leadership prominence is a structural position that emerges from the complex array of dependency relationships among all actors in a community field. The mutual but asymmetric dependency relationships that characterize the structure of the community field can be given as

$$D = AC', \tag{10}$$

where D is the (N,N) matrix of dependency relationships, A is the (N,M) participation matrix, and C is the (N,M) control matrix.

In Center City, the dependency matrix is of order (120, 120). Because of its size, it is not presented here. However, it is computed using the data provided in Appendix B and Appendix C. Table 19 illustrates the dependency matrix for the same 10 Center City actors discussed previously.

As reported in Table 6, actors 1 and 2 only participated

Table 19. Dependency relations among 10 Center City actors

Actor	Actor number									
	#1	#2	#3	#4	#5	#6	#7	#8	#9	... #120
1	.250	.300	.100	.000	.000	.000	.000	.000	.000	.000
2	.250	.300	.100	.000	.000	.000	.000	.000	.000	.000
3	.250	.300	.121	.050	.113	.056	.017	.000	.000	.046
4	.000	.000	.021	.050	.113	.056	.017	.000	.000	.046
5	.000	.000	.021	.050	.113	.056	.017	.000	.000	.046
6	.000	.000	.021	.050	.113	.221	.234	.000	.000	.046
7	.000	.000	.021	.050	.113	.221	.452	.015	.069	.311
8	.000	.000	.000	.000	.000	.000	.027	.015	.045	.040
9	.000	.000	.000	.000	.000	.000	.029	.015	.069	.127
⋮										
120	.000	.000	.021	.050	.113	.056	.0234	.015	.069	.311

in interest field 7 (social services). Actor 2 occupies the more prominent position in interest field 7 and receives a control score of .300 (Table 18). Therefore, actor 1's dependence on actor 2 is given as .3 (Table 19). Similarly, actor 2 is dependent on actor 1. Actor 2's dependence on actor 1 is given as .25 (Table 19). Actors 1 and 2 depend on one another, but actor 1's dependence on actor 2 is greater than actor 2's dependence on actor 1. The computation of dependency scores accounts for the direct and indirect relationships among all actors in the system of action.

Actors' prominence in the community leadership structure is calculated as the largest eigenvector of the (N,N), asymmetric dependency matrix D (Marsdan and Laumann, 1977). The elements of the eigenvector are divided by the corresponding eigenvalue. This normalizes the elements of the eigenvector so that the most prominent leadership position is assigned a score of 1.0 (Van de Geer, 1971).

Leadership prominence scores ranged from 0.0 to 1.0 (Table 20). The median prominence score is .1047; the mean prominence score is .1525, and the standard deviation is .1768. The distribution of prominence scores is positively skewed (skewness = 2.452). The positively skewed distribution of leadership scores indicates that positions of high leadership prominence are concentrated among a relatively small number of actors in Center City.

Table 20. Leadership prominence in the community field

Actor	Prominence score	Rank
1	0.030569	95
2	0.036682	92
3	0.096210	63
4	0.202017	27
5	0.951565	8
6	0.421003	9
7	0.852248	3
8	0.060854	80
9	0.279890	18
10	0.477158	7
11	0.167478	37
12	0.106692	59
13	0.250008	21
14	0.111478	54
15	0.114531	43
16	0.362700	13
17	0.044557	87
18	0.109569	56
19	0.009143	105
20	0.007178	106
21	0.082412	74
22	0.330475	14
23	0.853057	2
24	0.306378	17
25	0.152485	41
26	0.170577	34
27	0.190808	28
28	0.165076	39
29	0.165141	38
30	0.045270	85
31	0.124670	48
32	0.030569	95
33	0.000000	115
34	0.084608	72
35	0.121187	51
36	0.023857	98
37	0.130393	47
38	0.143857	45
39	0.090852	68
40	0.066521	77
41	0.104864	60
42	0.170488	35
43	0.022506	100

Table 20 (Continued)

Actor	Prominence score	Rank
44	0.324528	15
45	0.035591	93
46	0.149373	42
47	0.087462	71
48	0.186667	29
49	0.114322	55
50	0.044791	86
51	0.091014	67
52	0.123458	49
53	0.135063	46
54	0.081299	75
55	0.108841	57
56	0.040535	90
57	0.089051	70
58	0.095519	64
59	0.066457	79
60	0.092619	65
61	0.271671	19
62	0.072622	76
63	0.103702	62
64	0.376763	11
65	0.241230	22
66	0.167557	36
67	0.104450	61
68	0.002832	109
69	0.003638	108
70	0.005143	107
71	0.002250	111
72	0.049496	88
73	0.018791	102
74	0.060255	81
75	0.210628	26
76	0.118800	52
77	0.224572	24
78	0.001173	113
79	0.115604	53
80	0.215660	25
81	0.023345	99
82	0.054091	83
83	0.084415	73
84	0.034236	94
85	0.108436	58
86	0.042356	89

Table 20 (Continued)

Actor	Prominence score	Rank
87	0.052329	84
88	0.384760	10
89	0.001982	112
90	0.020674	101
91	0.529214	6
92	0.372257	12
93	0.181640	30
94	0.175966	33
95	0.026696	97
96	0.089277	69
97	0.000000	115
98	0.002669	110
99	0.001502	114
100	0.040171	91
101	0.123370	50
102	0.018013	103
103	0.181640	30
104	0.055140	82
105	0.091874	66
106	0.066521	77
107	0.000000	115
108	0.000000	115
109	0.000000	115
110	0.177300	32
111	0.319135	16
112	0.000000	115
113	0.547309	5
114	0.155995	40
115	0.235816	23
116	0.012227	104
117	0.144021	44
118	0.268301	20
119	0.652937	4
120	1.000000	1

The Kolomogorov D statistic (D = .19411), is used to test the hypothesis that the distribution of observations is normally distributed in the population. Using this statistic, it is highly unlikely that leadership prominence in Center City is normally distributed ($p < .01$). This test must be interpreted with extreme caution, however, as it assumes that the sample is randomly selected from some population. Here, the statistical test is used as a descriptive tool to indicate the extent to which the distribution deviates from normality.

The concentration of leadership prominence in Center City is more directly indicated by the percentile distribution. The 90th percentile (the point at which 90 percent of the leadership prominence scores are lower) is .3713. And 50 percent of the identified actors have leadership prominence scores smaller than .1047, the median. The distributional characteristics of leadership can fruitfully be used in comparative community research. Whether leadership prominence in Center City is more or less concentrated than in other communities requires comparative research.

Actor 120 occupies the most prominent position in the leadership structure of Center City (Table 20). Actor 120 is identified as an active participant in four special interest fields. He/she is the fifth most prominent actor in interest field 1 (industrialization); the fourth most

prominent actor in interest field 2 (externally induced issues); the sixth most prominent in interest field 4 (local government affairs; and the eleventh most prominent in interest field 6 (general community development and planning). Actor 120 is not the most prominent actor in any of the special interest fields, but is the most prominent actor in the community field because he/she occupies relatively prominent positions in multiple interest fields, each of which exhibits relatively strong structural linkages with other local interest fields.

Compare actor 120 with actor 7, the third most prominent actor in the community field structure. Actor 7 participates in 5 interest fields while actor 120 participates in only 4. But actor 120 has more leadership prominence in the community field than actor 7 because the latter occupies less prominent positions in the interest fields in which he/she participates. Thus, leadership prominence in the community field is not merely a function of the number of interest fields in which actors participate, but also of the structural positions actors occupy in those fields and the degree to which those fields are structurally connected to others.

Actors 33, 97, 107, 108, 109, and 112 did not contribute to the community field structure. They participate only in interest field 8 (fund raising). Recall that interest field 8

is completely isolated from other special interest fields in Center City. Participation in completely isolated interest fields does not contribute to the community field structure as a whole.

Actor 99 occupies the least prominent leadership position among those actors who contributed to the community field. Actor 99 participates only in interest field 1 (industrialization) and occupies the least prominent position in that field.

Correlates of Leadership Prominence

Leadership prominence scores, calculated as the largest eigenvector of the dependency matrix D, represent an actor's structural position in a network of social relationships rather than the actor's personal characteristics. These leadership prominence scores can easily be used in more traditional analytic techniques.

To illustrate, the relationship of leadership prominence with several measures of actor's personal characteristics are examined. The purpose here is not to develop a comprehensive explanation of leadership prominence in community action structures, but rather to illustrate how this measure can be used in future research. Specifically, the relationships between leadership prominence and age, sex, education, income, and length of community residence are examined.

Pearson product moment correlation coefficients indicate that the relationships between leadership prominence in the community action structure and the personal characteristics of actors are very weak (Table 21). In Center City, leadership prominence is not substantively related with the actor's age, education, income, or length of residence in the community. A weak relationship between leadership prominence and sex is observed ($r = .148$). This indicates that males are slightly more likely than females to occupy prominent positions in the leadership structure.

These findings suggest that personal characteristics have little if any effect on leadership prominence within the identified sample, even though they may be an important factor that differentiates active participants from the general population.

These findings are consistent with Beaulieu and Ryan (1983). They found that the intensity of participation in local action programs was only weakly associated with the age, income, or the reputed leadership status of individual actors. Beaulieu and Ryan did find that the intensity of actor's participation in local action programs was positively associated with organizational leadership status. They argued that interorganizational leaders (those individuals holding three or more organizational leadership positions) have greater access to generalizable resources than others.

Table 21. Zero-order correlations of leadership prominence with personal attributes of actors

Variable	Variable 1	2	3	4	5	6
1. Leadership prominence	1.000					
2. Sex[a]	.148	1.000				
3. Age[b]	.049	.061	1.000			
4. Education[c]	-.076	.161	-.059	1.000		
5. Income[d]	.002	.034	.159	.232	1.000	
6. Length of residence[e]	-.071	.147	.507	-.287	-.007	1.000

[a] 0 = female, 1 = male.

[b] Respondents age in years.

[c] 1 = less than high school; 2 = high school; 3 = some college or vocational training; 4 = four year college graduate; 5 = some graduate work; 6 = received post graduate degree.

[d] 1 = less than $5,000; 2 = $5,000-9,999; 3 = $10,000-14,999; 4 = $15,000-19,999; 5 = $20,000-24,999; 6 = $25,000-34,999; 7 = $35,000-49,999; 8 = $50,000 or more.

[e] Number of years respondent had lived in Center City.

Marsdan (1982, 1983) and Burt (1977) similarly argue that access to resources is an important determinant of actors' positions in networks of social action. The measure of leadership prominence in community field structures developed here provides a tool for testing such hypotheses in future research.

These findings should be interpreted with caution. The snowball sampling procedures that were used identified a relatively homogeneous sample of active participants in community issues. This sample is not representative of the community population as a whole. Only 20% of the individuals identified as active participants were female and only 1 (out of 120) was black. The within sample homogeneity may suppress the magnitude of relationships between personal characteristics and leadership prominence.

SUMMARY AND CONCLUSIONS

The primary purpose of this thesis was to develop and illustrate quantitative techniques to measure important characteristics of community action structures. The techniques illustrated here have important implications for community development practice and research.

Summary of Thesis

The community field perspective (Kaufman, 1959; Wilkinson, 1970a) was adopted as a theoretical framework for studying the social structures that emerge through goal-directed action in local societies. Community field theory is the application of social field concepts to the study of behavior in geographical localities.

Social field theory focuses on the social relational aspects of social organizations, emphasizing the behavioral roles performed by actors in the process of purposive social action. Wilkinson (1970a:317) conceptualized social fields as ". . . a process of interaction through time, with direction towards some more or less distinctive outcome and with constantly changing elements and structure." Researchers using the community field perspective attempt to place episodes of goal-directed local action within the broader context of community structure.

From a field perspective, community is defined in terms of behavioral roles that express the multi-interest orientation of the local society. These roles are performed in the process of purposive social action. The community field emerges from episodes of goal-directed action and is presumed to be an important social structure in local societies.

Community field theory emphasizes the processes through which distinct special interest fields are integrated and coordinated into a holistic community action structure. Specifically, the process of individual actors working together to pursue common objectives and resolve local issues is recognized as a primary mechanism through which local integration and coordination occur (Dasgupta, 1974).

The community field is but one of several distinct locally-oriented social fields. Also present are special-interest fields which are defined by actions oriented towards the accomplishment of goals and objectives within local organizations and institutions. The community field is distinguished from these special interest fields on the basis of its multi-interest orientation.

Community development was defined as purposive activity that increases the integration and coordination among the special interest fields existing within the local society (Kaufman, 1975; Wilkinson, 1972). From a community field perspective, an integrated action structure is somewhat

defined as a desirable objective. Such a structure is presumed to characterize communities with greater problem-solving capacity than communities characterized by an autonomous action structure in which the special interest fields are independent of one another (Kaufman, 1979; Wilkinson, 1979). Without a coordinative social structure, the community can be described as an ecology of games. In an ecology of games, the activities in distinct institutional interest areas are largely independent of one another (Long, 1958).

While community field theory is a particularly useful perspective for conceptualizaing community action, empirical techniques to operationalize important structural characteristics of community fields have not fully utilized available information concerning the form and content of social relationships among actors in local interest fields. The refinement of empirical techniques to measure structural characteristics of community fields will facilitate both research on the processes important to community development and the evaluation of community development programs.

The measurement techniques adopted are based on network analysis, a method for studying structures of social relationships. Network analysis is highly concordant with social field theory and provides a useful tool for formally measuring structural characteristics of community fields.

Two distinct types of network analysis models were illustrated. Each was used to measure important characteristics of local action structures using data collected in a central Iowa community in 1981. One describes the degree to which special interest fields within a local society are coordinated with one another. The second describes actors' leadership prominence as a function of their position in the structure of goal-directed social action. Both have important implications for community development research and practice.

An inductive data collection strategy was required to identify existing institutional interest fields in Center City. First, interviews were conducted with community knowledgeables who identified important issues, programs, and events that had taken place over the previous three years in Center City. They were also asked to identify key actors in each of the identified issues and events. A total of seventeen issues were identified during interviews with knowledgeables. Because of sampling concerns, three of these issues were excluded from subsequent analysis. Based on the content of social action, the remaining 14 issues were grouped into eight distinct special interest fields. Snowball sampling techniques were then used to identify the critical participants in local action episodes. Altogether, 120 Center City residents were identified and interviewed as active

participants in at least one of the 14 local issues.

Implications of Measures of Interest Field Coordination

The structure through which coordination among special interest fields occurs was studied in terms of actor's participation in local interest fields. Actors who participated in multiple special-interest fields were presumed to provide a direct structural linkage between the fields in question. The coordinative linkages between interest fields were described by measuring the density of joint participation of individual actors.

Implications for community research

Because this is a case study, it is difficult to determine if Center City is characterized by high or low levels of coordination among institutional interest fields in comparison to other communities. Comparative community research is required to answer this question. Nevertheless, one can speculate about important relationships between the characteristics of local action structures and other community characteristics.

The measures of local coordination presented here can be used to develop and test theoretical hypotheses concerning community structure and change. For example, a researcher may

study the relationship between ecological or stratification structures and the structure of goal-directed social action.

The measurement technique illustrated here could be used in comparative community research to investigate a wide range of theoretically relevant research questions. Some potentially interesting questions include: How do population size, density, and heterogeneity effect coordination among local interest fields? How does community complexity influence the structure of community action? How does vertical integration (Warren, 1978) effect coordination among local interest fields? What is the relationship between the social psychological feelings of local residents (such as community attachment or community satisfaction) and the local action structure? Research to answer such questions will advance theoretical knowledge of community action.

The measure of local coordination illustrated in this thesis can also be used to determine the structural conditions under which alternative change strategies are effective. In the first chapter, three broad approaches to planned community change were introduced. Unfortunately, relatively little is known about the conditions under which alternative planned change strategies are likely to be most effective. Researchers can use this measure of coordination among local interest fields to better specify the structural conditions under which

the technical assistance approach, the confrontation approach, or the nondirective self-help approach will be most effective in obtaining desired goals. Again, comparative community research will be required to address these important questions. Such research will greatly contribute to the development of community development theory.

Implications for community development practice

This measurement technique has at least three broad implications for community development practice. First, it can be used by community development practitioners to diagnose the structure of the community systems where development is attempted. Rossi et al. (1978) refers to this as parameter estimation. Parameter estimation involves the application of a wide range of techniques to estimate the distributional parameters of existing social situations. Purposive efforts to improve the integration of the local action structure will become much easier once that structure is identified and measured.

In Center City, the industrialization field, externally induced activities field, recreation field, local government affairs field, education field and general community development and planning field formed a core of coordinated local activity in which the density of structural linkages was relatively high. Of these, the industrialization field and

the externally induced activities field exhibited the strongest coordinative linkage with one another. Two local interest fields, social services and fund raising, exhibited little or no structural linkage with other interest fields.

Measures of coordination among special interest fields can also be used to guide the development of planned change strategies. Given the normative goal of structure development, the findings provided by this technique guide the practitioner to develop programs involving actors from interest fields that exhibit little or no coordinative linkage with one another. From a community field perspective, programs that develop coordinative linkages between structurally disconnected interest fields are presumed to facilitate communication and improve the capacity of the community to mobilize local resources and solve local problems.

In Center City, a community development practitioner would be well-advised to initiate programs that involve individuals identified as active participants in social services and fund raising with actors identified as participants in the remaining interest fields. Such programs, if successful, will strengthen the community field structure through which local action is coordinated. The Center City findings also indicated that the recreation field and the education field were structurally disconnected. The community development practitioner is again advised to initiate

development programs that promote the joint involvement of actors identified as participants in these two interest fields.

The third way that this measure of coordination can be used in community development is as a tool to evaluate the effectiveness of community development programs. Community field theory clearly defines community development in terms of purposive activity that increases the degree to which the community field structure is coordinated. The empirical techniques presented in this thesis measure the degree to which local action is coordinated. This technique provides community developers with the ability to establish a base line from which the effects of planned change programs can be evaluated. Effective programs are those that enhance the coordinative linkages within the community field.

In summary, the technique illustrated in this thesis to measure coordination among local interest fields can be used in a variety of ways. It can be used to develop and test hypothesis concerning community structure and change, to estimate the existing conditions of the community action structure, used as a guide for program development, as a tool to monitor social change, and as a tool to evaluate the effectiveness of community development programs.

Implications of Measuring Community Leadership Prominence

The development of quantitative techniques to identify structurally prominent community leaders is important since the success of community action programs frequently depends on the effective mobilization of leadership resources (Tait et al., 1978). Prominent community leaders often have the ability to facilitate the successful accomplishment of planned change objectives. They can do so because they occupy structural positions that enable them to mobilize the resources necessary for successful program accomplishment. At the same time, when leaders do not sanction planned change activities, they can block successful program accomplishment. Because prominent leaders have a high capacity to direct planned change processes, community change agents are advised to identify and enlist the support of prominent community leaders.

From a community field perspective, leaders are recognized as the active participants in the process of goal directed social action. Leaders are presumed to influence the process of community action through their participation in events rather than their reputed capacity to influence. Therefore, leadership prominence in the community field is conceptualized as a property of the actor's position in the structure of goal-directed social action rather than as an

intrinsic attribute of the actor.

In this thesis, a measure of community leadership prominence was developed that accounts for behavioral roles that contribute to the multi-interest orientation of the community field. This measure uses information about the direct and indirect social relationships among all actors identified as participants in local interest fields.

The measurement technique presented here not only identifies individuals who occupy prominent positions in the structure of community action. In addition, it also identifies individuals who occupy prominent leadership positions within specific spheres of goal-directed activity. If the change agent seeks to accomplish task objectives within an institutional interest area, prominent leaders in that area are identified. If the change agent seeks to accomplish broad community goals, prominent leaders in the structure of community action can be identified. Thus, this technique has the advantage of identifying prominent leaders within special interest fields as well as within the community field as a whole.

A particularly interesting line of future research is to develop empirical strategies to measure actors' control over generalizable resources which can be used to solve a wide range of problems or accomplish diverse goals. Burt (1977),

Marsdan (1982, 1983), Perrucci and Pilisuk (1970), and Beaulieu and Ryan (1983) all agree that control over generalizable resources is one factor that determines an actors position in community power and leadership structures. Using the techniques described here, the relationship between resource control and leadership prominence in the community field can empirically be examined.

Limitations of the Study

As presently formulated, community field theory emphasizes the behavioral elements of social organization. As such, the importance of norms, values, and subjective orientations of actors are largely ignored. Future studies should augment measures of behavioral participation in social fields with measures of the normative structures that guide actors' participation in goal-directed activities and with measures of actors' subjective interests in different spheres of activity. For example, future research might seek to determine if individuals actively participate in social fields in which they are subjectively interested, or if they actively participate because of their location in other social structures, such as the occupational structure.

Another potential limitation of this study was that community actions were studied over a three year time period. Had a longer time frame been chosen, additional issues would

undoubtedly have been identified. This would increase the potential for identifying additional institutional interest fields as well as increasing the potential for identifying additional multiple-interest area actors. At the same time, a longer time frame would increase the probability of recall error among respondents and would increase the difficulty of locating individuals identified as active participants in local issues. The three year time period was chosen as a reasonable compromise. Nevertheless, the action structure that was identified was contingent upon the time frame chosen. The observed structure of local action would likely have been different had a longer or shorter time frame been chosen.

The snowball sampling technique that was used to identify the important local issues and the actors who participated in those issues is also a potential source of bias. The method used to identify local issues assumes that knowledgeables represent the full range of interests that exist within the local society. Knowledgeables were purposely selected on the basis of their perceived knowledge of Center City in general. Care was taken to select a broad cross section of knowledgeables. Nevertheless, to the extent that the selected sample of knowledgeables fails to represent the broad range of local interests, the sample of issues and actors is potentially biased.

In future studies, complete information should be

collected from all individuals identified as formal authorities in issues. One issue was excluded from the analysis because two individuals identified by knowledgeables as issue authorities reported that it was not one of the five issues in which they were most actively involved. When identified issue authorities fail to provide complete information concerning the participation of others in the issue, the sample of first level influentials identified as active participants in that issue is likely to be biased.

Conclusion

Community field theory provides a useful theoretical perspective for conceptualizing goal-directed action within local societies. Using this perspective, community was defined as a social structure which emerges from behavioral roles that express the multi-interest orientation of local societies. And community development was defined as any purposive attempt to enhance the coordinative nature of the community field structure. In this thesis, empirical strategies for measuring important structural characteristics of community action structures have been described and illustrated. Development of these techniques is an important initial step toward better understanding of community action. The potential advantages of these techniques will only be fully realized in comparative community research.

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APPENDIX A: QUESTIONNAIRE

Iowa State University Sept., 1981

Agricultural Experiment Station

A Study of Citizen Participation in Community Action

I.D. NUMBER _____ _____ _____

INTERVIEWER _____ AM 1 PM 2

TIME OF INTERVIEW _____ _____:_____ _____

Hi, I'm _____. I'm working on an Agricultural Experiment Station project for Iowa State University. This project is intended to increase our understanding of citizen participation in Iowa communities.

We are talking to several persons like yourself about recent Marshalltown issues, events, and projects. We are also interested in people's involvement in organizations, and their opinions about leadership in Marshalltown. Our goal is to determine what types of people actively participate in community affairs.

All of the information you provide will be strictly confidential. None of the information will be published or released in any form which would identify you as the source, nor will any name or individuals be mentioned in any of our findings.

Are there any questions you would like to ask before I begin?

A Study of Citizen Participation

Q-1. We would like to begin by asking what you think have been the three most important things which have been done over the past three years to make this community a better place in which to live?

a) _____

b) _____

c) _____

Q-2. Looking to the future, what do you think are the three most important things which need to be done to make this community a better place in which to live?

a) _____

b) _____

c) _____

Q-3. Now we would like to discuss some issues commonly faced by American communities. (HAND RESPONDENT CARD A). Please look over the six issues listed on this card. They represent different things most cities would like to accomplish. Unfortunately, no one community has the resources to do all these things at once. Look over the list and order the issues according to their importance for Marshalltown. That is, which issue do you think is most in need of immediate attention in Marshalltown? Which would you rank second? Third? And so forth? Please rank all six.

[RECORD THE NUMBER IN EACH BLANK PROVIDED.]

A. _____ Seeing to it that this city becomes a very attractive place to live--with good residential areas and pleasant, convenient community facilities.

B. _____ Seeing to it that Marshalltown has a good climate for business which would encourage economic growth.

C. _____ Seeing to it that Marshalltown provides its poor and disadvantaged with a decent life--with adequate food, housing, and opportunity.

D. _____ Seeing to it that this community is free from harmful conflict between special interest groups.

E. _____ Seeing to it that Marshalltown has an honest, efficient, and economical government.

F. _____ Seeing to it that Marshalltown is a place where residents play an active role in local government.

II. ISSUE PARTICIPATION

In an earlier phase of this study, we asked individuals living in Marshalltown to list issues, projects, and events which have received widespread attention in this community over the past three years or so. Here is a list of some of the issues frequently mentioned. (HAND RESPONDENT CARD B).

Q-4. Please read over the list and tell me which issues you have been actively involved in at any time over the past three years. That is, indicate each issue in which other people would recognize you as an active participant or spokesperson.

[CIRCLE NUMBER OF EACH ISSUE NAMED.]

1. Extension of Airport Runway
2. Quality of Sewage Treatment
3. Crosstown Boulevard Development/Improvement of Surface Transportation
4. Development of Recreational Facilities
5. Fire Safety Code Inspections
6. Swimming Pool at Pleasant Hills School
7. Student Walkout at High School/Committee for Resolution
8. Defeat of Bond Issue for Auditorium at School
9. Pride Days Committee
10. Efforts to Improve Labor - Management Relations/Labor - Management Relations Committee
11. Skatetown Rezoning Request
12. Jobs for Marshalltown Committee
13. Community Relations Committee
14. Congregate Meals Program/Meals on Wheels
15. Raising Money for Police Dog/Crime Committee
16. Lack of Industrial Space/Speculative Building Projects
17. Charging Arts Association Rent on Space in Fisher Building

Q-5. Are there any other issues which you have not already mentioned that are listed on card B in which you were actively involved as a participant or spokesperson?

_____ yes (CIRCLE APPROPRIATE NUMBER)

_____ no

[IF RESPONDENT INDICATES INVOLVEMENT IN MORE THAN 5 ISSUES ASK 5a.] [OTHERWISE GO TO Q-6.]

Q-5a. Of the issues you mentioned, which five would you say you were <u>most</u> actively involved in?

(UNDERLINE THE 5 INDICATED ISSUES)

[ASK Q-6 TO Q-20 FOR EACH ISSUE IN WHICH RESPONDENT INDICATES INVOLVEMENT. IF INVOLVEMENT IN MORE THAN 5 ISSUES IS INDICATED, ASK ONLY FOR THE 5 ISSUES IN WHICH RESPONDENT WAS MOST ACTIVELY INVOLVED. RECORD ANSWERS FOR Q-6 TO Q-20 ON WORKSHEETS.]

Q-6. First we'd like to talk about (name issue). Would you say your participation was voluntary or not voluntary, by not voluntary we mean were you drawn in because of occupational, organizational, or other commitments which required you to become involved?

Yes, Voluntary (RECORD ON WORKSHEET)
No, Not Voluntary (RECORD ON WORKSHEET (Q-6b)

Q-6a. In your own words, what were the reasons you became actively involved in (name issue)? (Q-7)

Q-6b. Specifically, what were the commitments which required your involvement in this issue or project?

Q-7. Now, would you briefly describe how this became a community issue or project? For instance, did some event take place that made this a community issue? Or did some group or individual initiate this project or issue?

Q-8. Now, we would like to have you describe all the actions you have taken with respect to (name issue). To give you an idea of what I mean, here is a list of actions which are normally carried out during community projects of this type. (HAND RESPONDENT CARD C). I would like to emphasize that this is by no means a complete list, so please feel free to mention any other activities you took concerning (name issue). Precisely what role or roles did you play which were relevant to this matter?

Q-8a. Are there any other actions you took which are not on Card C? (IF YES, RECORD ANSWERS ON WORKSHEET)

Q-9. As you recall, who else in Marshalltown was actively involved in (name issue) besides yourself? In answering this question, please try to think of individuals who actively supported or opposed (name issue)?

Q-10. Are there any other individuals that you have not already mentioned who were actively involved in this issue?

[RECORD NAMES OF ADDITIONAL INDIVIDUALS ON WORKSHEET Q-9 AND Q-10.]

Q-11. Of the individuals you mentioned as active participants, which ones did you personally have the most contact with concerning (name issue)?

Q-12. With which, if any, of these individuals have you had close business or professional contact? I'm thinking here of individuals you frequently communicate with concerning business or professional matters.

Q-13. Which, if any, of the individuals mentioned do you consider to be close personal friends? That is, persons with whom you meet socially on a fairly regular basis.

Q-14. In your opinion, who was the one individual who had the greatest influence on the decisions made concerning (name issue).

Q-15. Next, please name the organizations, agencies, or groups which actively supported or opposed (name issue). Again I'm thinking here of any groups which took an active role concerning this issue.

Q-16. Are there any other organizations, agencies, or groups that you have not already mentioned which were actively involved in this issue or project?

[RECORD NAMES OF ADDITIONAL ORGANIZATIONS ON WORKSHEET Q-15 AND Q-16].

(HAND RESPONDENT CARD D). Please use Card D to answer the following 3 questions. Notice that the statements on each end of the scales represent opposites.

Q-17. Using the scale for question 17, please give me the number that you think best represents the degree to which information was openly exchanged among residents and groups concerning (name issue). You should answer number 1 if you think this issue was characterized by a very open exchange of information among community residents and groups. You should answer 9 if a very restricted exchange of information characterized this issue. Or, you may choose any number between 1 and 9 which you feel characterizes the exchange of information among community residents and groups concerning this issue.

Q-18. Now, using the scale for question 18, rate the degree of conflict and controversy surrounding (name issue)? Notice that 1 represents a very high degree of conflict and controversy, while 9 represents a very high degree of agreement and consensus. Which number along the scale would you choose?

Q-19. Using the scale for question 19, please give me the number which you think best represents the degree to which average citizens had the opportunity for becoming involved in (name issue). On this scale, the number 1 represents much opportunity for citizen involvement, while 9 represents very little opportunity for citizen involvement.

Q-20. Thinking back on your involvement in (name issue), what, if anything, would you do differently if you had it to do over again?

[REPEAT Q-6 TO Q-20 FOR EACH ISSUE RESPONDENT HAS PARTICIPATED IN.]

II. ORGANIZATIONAL AFFILIATION

Q-21. Listed her are some types of organizations and associations in which people frequently participate. (HAND RESPONDENT CARD E). Please examine the list and give me the name of each organization and association in which you have held membership at any time over the last 3 years. In addition to local organizations, we're interested in any memberships you may have in regional, state, or national organizations, even if there is not a local chapter.

[LIST EACH ORGANIZATION IN COLUMN Q-21.]

We obviously have not included all types of organizations and groups on the list. Please name any other organizations, groups, or associations which you have belonged to over the past three years, even if you think the group is unimportant.

[WRITE ADDITIONAL ORGANIZATIONS IN COLUMN Q-21.]

Q-21a. At any time over the past three years, have you been an officer of (name organization) or a member of its Board of Trustees or Board of Directors?

[IF NO GO TO Q-22.]

Q-21b. (IF YES:) Was the position you held at the local, county, state, or national level?

Q-22. Have you served on any committee of (name organization) over the past three years?

Q-21.	Q-21a. OFFICER OR BOARD MEMBER		Q-21b. LEVEL OF OFFICE				Q-22. COMMITTEE MEMBERSHIP	
ORGANIZATIONS	Yes	No	L	CO	S	NTL	Yes	No
1. _____	___	___	___	___	___	___	___	___
2. _____	___	___	___	___	___	___	___	___
3. _____	___	___	___	___	___	___	___	___
4. _____	___	___	___	___	___	___	___	___
5. _____	___	___	___	___	___	___	___	___
6. _____	___	___	___	___	___	___	___	___
7. _____	___	___	___	___	___	___	___	___

ADDITIONAL SPACE FOR ORGANIZATIONAL INVOLVEMENT ON NEXT PAGE

Q-21.	Q-21a.		Q-21b.				Q-22.	
	OFFICER OR BOARD MEMBER		LEVEL OF OFFICE				COMMITTEE MEMBERSHIP	
ORGANIZATIONS	Yes	No	L	CO	S	NTL	Yes	No
8. _____	___	___	___	___	___	___	___	___
9. _____	___	___	___	___	___	___	___	___
10. _____	___	___	___	___	___	___	___	___
11. _____	___	___	___	___	___	___	___	___
12. _____	___	___	___	___	___	___	___	___
13. _____	___	___	___	___	___	___	___	___
14. _____	___	___	___	___	___	___	___	___
15. _____	___	___	___	___	___	___	___	___

IV. SOCIAL AND PERSONAL CHARACTERISTICS

Now I would like to ask you a few questions about you, your family, and your feelings about Marshalltown as a place to live.

Q-23. [INTERVIEWER DO NOT ASK, CHECK SEX:] (1) ____ Male (2) ____ Female

Q-24. What is your present age? ____ Years

Q-25. How much formal education have you completed?

a) ____ Less than high school graduate
b) ____ High school graduate (includes GED)
c) ____ Some college
d) ____ Vocational or technical training
e) ____ Four year college graduate (BA, BS or equivalent)
f) ____ Some graduate work
g) ____ Received post graduate degree (MS, PhD, MD, DDS, MBA, MSW, etc.)

Q-26. Using the categories listed on Card F (HAND RESPONDENT CARD F), please select the letter of the category which contains your family's total income, after taxes, in 1980.

a) ____ Less than $5,000
b) ____ $5,000-$9,999
c) ____ $10,000-$14,999
d) ____ $15,000-$19,999
e) ____ $20,000-$24,999
f) ____ $25,000-$34,999
g) ____ $35,000-$49,999
h) ____ $50,000 or more

Q-27. Are you presently:

a) ____ Employed fulltime
b) ____ Employed parttime
c) ____ Unemployed (Q-28)
d) ____ Retired (Q-28)
e) ____ Disabled (Q-28)
f) ____ Fulltime homemaker (Q-28)
g) ____ Student (Q-28)

Q-27a. What is your primary occupation? Please be specific about job title and kind of work.

_____

Q-27b. Who is your primary employer? That is, what firm or business do you work for?

_____

Q-28. What is your present marital status?

a) ____ Married
b) ____ Never married (Q-30)
c) ____ Separated
d) ____ Divorced
e) ____ Widowed

Q-29. How many children do you have who are: (WRITE IN 0 IF NONE.)

a) ____ Under 5 years of age
b) ____ 5 through 12 years of age
c) ____ 13 through 18 years of age
d) ____ Older than 18

Q-30. Generally, speaking, do you usually think of yourself as a Republican, a Democrat, an Independent, or do you have some other political preference?

a) ____ Republican
b) ____ Democrat
c) ____ Independent (Q-30b)
d) ____ Other (specify) _____ (Q-31)

Q-30a. Would you call yourself a strong (Republican/Democrat?)

(1) ____ Yes (Q-31)
(2) ____ No (Q-31)

Q-30b. IF INDEPENDENT: Do you think of yourself as closer to the Republican or the Democratic party?

1.____ Republican
2.____ Democratic

Q-31. How many years have you lived in the Marshalltown area?

_____ Years

Q-32. Was your father a resident of this community?

a) _____ Yes
b) _____ No (Q-33)

Q-32a. IF YES ASK: During what years was your father a resident of the Marshalltown area?

from _____ to _____

Q-33. Being as specific as you can, what kind of work was your father involved in most of his life, that is, what was his occupation?

_____

Q-34. How active would you say your father was in the organizations and affairs of the communities in which he lived?

____ 1. Very active
____ 2. Quite active
____ 3. Somewhat active
____ 4. Not very active at all

Q-35. Of all the friends you how have, what proportion would you say live in the Marshalltown area? Would you say. . .

____ 1. More than 75%
____ 2. Between 50% and 75%
____ 3. Between 25% and 50%, or
____ 4. Fewer than 25%

Q-36. Of all your adult relatives and in-laws, excluding the very distantly related ones and those in your household, what proportion would you say live in the Marshalltown area? Would you say. . .

____ 1. More than 75%
____ 2. Between 50% and 75%
____ 3. Between 25% and 50%,or
____ 4. Fewer than 25%

Q-37. What proportion of the economic leaders in the Marshalltown area do you personally know? Would you say you know. . .

____ 1. More than 75%
____ 2. Between 50% and 75%
____ 3. Between 25% and 50%, or
____ 4. Fewer than 25%

Q-38. What proportion of the political leaders in the Marshalltown area do you personally know? Would you say you know. . .

____ 1. More than 75%
____ 2. Between 50% and 75%
____ 3. Between 25% and 50%, or
____ 4. Fewer than 25%

Q-39. Suppose that for some reason you had to move away from this community. How would you feel? Would you feel. . .

____ 1. Very sorry

____ 2. Quite sorry

____ 3. Quite pleased

____ 4. Very pleased, or would you say

____ 5. It wouldn't make any difference one way or the other

Q-40. Would you say you have

____ 1. Little or no interest

____ 2. Some interest, or

____ 3. Much interest in knowing what goes on in the Marshalltown area

Q-41. Now I would like to read you some statements about Marshalltown. Using the categories on this card (HAND RESPONDENT CARD G), please tell me whether you (SA) strongly agree, (A) agree, are (U) undecided, (D) disagree, or (SD) strongly disagree with each statement after I read it.

	(CIRCLE ANSWER)				
	SD	A	U	D	SD
a) Relations between labor and management in Marshalltown are as good as can be expected.	1	2	3	4	5
b) Marshalltown should more actively seek new industry.	1	2	3	4	5
c) Women in Marshalltown have as much opportunity as men for getting involved in local decision making.	1	2	3	4	5
d) Labor unions locally have had a positive impact on our community.	1	2	3	4	5
e) Community leaders are willing to take economic chances to attract new industry to Marshalltown.	1	2	3	4	5
f) Persons who have lived in the Marshalltown area for less than three years have as much opportunity as long time residents for getting involved in local decision making.	1	2	3	4	5
g) I really don't feel "at home" in Marshalltown.	1	2	3	4	5

	SA	A	U	D	SD
h) Marshalltown appears incapable of solving its own problems	1	2	3	4	5
i) Young adults do not have as much opportunity as others for getting involved in local decision making.	1	2	3	4	5
j) I feel a deep sense of commitment to Marshalltown.	1	2	3	4	5
k) There is little conflict between people or groups in Marshalltown.	1	2	3	4	5
l) Businessmen in Marshalltown are good at working for the total community.	1	2	3	4	5
m) Local unions have restricted the efficient use of labor in Marshalltown.	1	2	3	4	5
n) Marshalltown leaders discourage citizen involvement in local issues.	1	2	3	4	5
o) Members of minority groups do not have as much opportunity as others for getting involved in local decision making.	1	2	3	4	5
p) Local labor unions have become too powerful for the good of Marshalltown.	1	2	3	4	5
q) The economic outlook for Marshalltown appears bright.	1	2	3	4	5
r) Working conditions in Marshalltown are very good.	1	2	3	4	5
s) There is too much power concentrated in the hands of a few large companies for the good of Marshalltown.	1	2	3	4	5
t) Marshalltown controls its affairs without county, regional, state, or national groups telling it what to do.	1	2	3	4	5

Q-42. Now we would like to have you name the persons in this community who you would say are your closest personal friends.

a) _____

b) _____

c) _____

d) _____

e) _____

Q-43. Please name the individuals in this community with whom you've had the closest business or professional contact.

a) _____

b) _____

c) _____

d) _____

e) _____

Q-44. Now, name the persons in this community with whom you've had the most contact concerning general Marshalltown affairs.

a) _____

b) _____

c) _____

d) _____

e) _____

VI. LEADERSHIP

Q-45. For communities to effectively deal with the types of issues and projects we've been discussing requires good leadership. One aspect of effective leadership is the way in which decisions are made. Which of the following three statements best describes the way important decisions have been made in Marshalltown over the last 3 years or so? (HAND RESPONDENT CARD H)

[WAIT FOR A RESPONSE. CHECK THE LETTER OF THE RESPONSE]

____ A. The majority of important public decisions in Marshalltown are made by a small group of residents who seem to be in constant contact with one another and whose influence is dominant over almost all public decisions, regardless of the subject matter. In short, Marshalltown is pretty much run by a small group of residents who frequently communicate with one another.

____ B. The majority of important public decisions in Marshalltown are made by a small group of residents who are in constant communication with their own constituency of Marshalltown's residents, rather than in constant contact with each other. The influence of these individuals is dominant over nearly all public decisions. In short, Marshalltown is pretty much run by a few individuals who represent special interest groups. Or:

____ C. The majority of important public decisions in Marshalltown are made through a process of give and take among a large number of local groups and individuals. On one issue, one combination of interested groups and individuals will work together, while on another issue an almost entirely different combination of residents will be found working together for a common purpose. In short, the community is pretty much run by changing groups of residents.

ASK Q-46 ONLY IF RESPONDENT ANSWERS A OR B TO Q-45. IF C IS SELECTED GO TO Q-49.

Q-46. From your response to the last question, it appears that in general, you feel public decisions in Marshalltown are made by a small number of residents. Please name all the individuals whose influence you feel has dominated public decisions in Marshalltown over the past 3 years.

	CHECK IF NAMED AS MOST INFLUENTIAL IN Q-48
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____
9. _____	_____
10. _____	_____

Q-47. Are there any other individuals that you have not already named whose influence has been dominant in Marshalltown over the past three years? (WRITE IN NAMES IN SPACES ABOVE)

Q-48. Of the individuals you named, which three would you say have been the most influential in shaping Marshalltown affairs? (CHECK THE 3 MOST INFLUENTIAL NAMED IN Q-48 IN SPACES ABOVE).

Q-49. Now, please name all the organizations, groups, or agencies which you feel have been very influential in shaping public decisions in the Marshalltown area over the past three years.

	CHECK IF NAMED AS MOST INFLUENTIAL IN Q-50a.
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

APPENDIX B: PARTICIPATION MATRIX

	Interest Field							
Actor	#1	#2	#3	#4	#5	#6	#7	#8
1	0	0	0	0	0	0	1	0
2	0	0	0	0	0	0	1	0
3	0	0	0	1	0	0	1	0
4	0	0	0	1	0	0	0	0
5	0	0	0	1	0	0	0	0
6	0	0	1	1	0	0	0	0
7	1	1	1	1	0	1	0	0
8	0	0	0	0	0	1	0	0
9	1	0	0	0	0	1	0	0
10	1	0	0	0	1	1	0	0
11	0	0	0	0	0	1	0	0
12	0	0	0	0	0	1	0	0
13	0	0	0	0	1	0	0	0
14	1	0	0	0	0	0	0	0
15	1	0	0	0	0	0	0	0
16	1	1	0	0	1	0	0	0
17	1	0	0	0	0	0	0	0
18	1	0	0	1	1	0	0	0
19	1	0	0	0	0	0	0	0
20	1	0	0	0	0	0	0	0
21	1	0	0	0	0	0	0	0
22	0	1	0	0	0	0	0	0
23	1	0	0	1	0	0	0	0
24	0	0	0	0	0	1	0	0
25	0	0	0	0	0	1	0	0
26	0	0	0	0	0	1	0	0
27	0	0	0	0	0	1	0	0
28	0	0	0	0	1	1	0	0
29	0	0	0	0	1	0	0	0
30	0	0	0	0	1	0	0	0
31	0	0	0	1	0	0	0	0
32	0	0	0	0	0	0	1	0
33	0	0	0	0	0	0	0	1
34	0	0	0	0	1	0	0	0
35	0	0	0	0	1	0	0	0
36	0	0	0	0	1	0	0	0
37	0	0	0	0	1	0	0	0
38	0	0	0	1	0	1	0	0
39	0	0	0	0	0	1	0	0
40	0	0	0	0	0	1	0	0
41	0	0	0	0	0	1	0	0
42	0	0	0	1	0	0	0	0
43	1	0	0	0	0	0	0	0
44	0	1	0	0	0	0	0	0
45	0	0	0	0	0	1	0	0
46	0	0	0	0	1	0	0	0
47	0	0	0	0	0	1	0	0

48	1	0	0	1	1	0	0	0
49	0	0	0	0	1	0	0	0
50	0	0	0	1	0	0	0	0
51	0	0	0	1	0	0	0	0
52	0	0	0	1	0	0	0	0
53	0	0	0	1	0	0	0	0
54	0	0	0	1	0	0	0	0
55	0	0	0	1	0	0	0	0
56	0	0	0	1	0	0	0	0
57	0	0	0	0	0	1	0	0
58	0	0	0	1	0	0	0	0
59	0	0	0	1	0	0	0	0
60	0	0	0	0	0	1	0	0
61	0	0	0	1	0	0	0	0
62	0	0	0	0	0	1	0	0
63	0	0	0	1	0	0	0	0
64	0	0	0	0	1	0	0	0
65	1	0	0	0	0	0	0	0
66	1	1	0	0	0	0	0	0
67	1	1	0	0	0	0	0	0
68	1	0	0	0	0	0	0	0
69	1	0	0	0	0	0	0	0
70	1	0	0	0	0	0	0	0
71	1	0	0	0	0	0	0	0
72	0	0	0	0	1	0	0	0
73	0	0	0	0	1	0	0	0
74	0	0	0	1	0	0	0	0
75	0	0	0	0	1	0	0	0
76	0	0	0	0	1	0	0	0
77	0	1	0	1	0	0	0	0
78	1	0	0	0	0	0	0	0
79	0	0	0	1	0	0	0	0
80	1	0	0	0	0	0	0	0
81	0	0	0	0	1	0	0	0
82	0	0	0	0	1	0	0	0
83	0	0	0	0	1	0	0	0
84	0	0	0	0	1	0	0	0
85	0	0	0	1	0	0	0	0
86	0	0	0	1	0	0	0	0
87	0	0	0	1	0	0	0	0
88	1	0	0	0	0	0	0	0
89	1	0	0	0	0	0	0	0
90	0	1	0	0	0	0	0	0
91	1	0	0	0	0	0	0	0
92	0	0	1	0	0	0	0	0
93	0	0	1	0	0	0	0	0
94	0	0	0	0	1	0	0	0
95	0	0	0	0	1	0	0	0
96	0	0	0	1	0	0	0	0
97	0	0	0	0	0	0	0	1
98	1	0	0	0	0	0	0	0
99	1	0	0	0	0	0	0	0
100	0	0	0	0	0	1	0	0
101	0	0	0	0	1	0	0	0
102	0	0	0	0	1	0	0	0

103	0	0	1	0	0	0	0	0
104	0	0	0	0	0	1	0	0
105	0	0	0	0	1	0	0	0
106	0	0	0	0	0	1	0	0
107	0	0	0	0	0	0	0	1
108	0	0	0	0	0	0	0	1
109	0	0	0	0	0	0	0	1
110	0	0	0	0	0	1	0	0
111	0	0	0	0	0	1	0	0
112	0	0	0	0	0	0	0	1
113	0	0	0	0	1	1	0	0
114	0	0	0	1	0	0	0	0
115	0	0	0	0	1	1	0	0
116	0	0	0	0	0	0	1	0
117	0	0	0	1	0	0	0	0
118	0	1	0	0	0	0	0	0
119	1	0	0	0	0	1	0	0
120	1	1	0	1	0	1	0	0

APPENDIX C: CONTROL MATRIX

Matrix C: Actors' Control in Special Interest Fields

Actor Number	Interest Field #1	#2	#3	#4	#5	#6	#7	#8
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.250000	0.000000
2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.300000	0.000000
3	0.000000	0.000000	0.000000	0.020936	0.000000	0.000000	0.100000	0.000000
4	0.000000	0.000000	0.000000	0.050361	0.000000	0.000000	0.000000	0.000000
5	0.000000	0.000000	0.000000	0.112571	0.000000	0.000000	0.000000	0.000000
6	0.000000	0.000000	0.164840	0.056016	0.000000	0.000000	0.000000	0.000000
7	0.002718	0.188290	0.217509	0.016527	0.000000	0.026719	0.000000	0.000000
8	0.000000	0.000000	0.000000	0.000000	0.000000	0.015079	0.000000	0.000000
9	0.024569	0.000000	0.000000	0.000000	0.000000	0.044581	0.000000	0.000000
10	0.028593	0.000000	0.000000	0.000000	0.017443	0.077695	0.000000	0.000000
11	0.000000	0.000000	0.000000	0.000000	0.000000	0.041499	0.000000	0.000000
12	0.000000	0.000000	0.000000	0.000000	0.000000	0.026437	0.000000	0.000000
13	0.000000	0.000000	0.000000	0.000000	0.092282	0.000000	0.000000	0.000000
14	0.028208	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
15	0.035519	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
16	0.059256	0.047711	0.000000	0.000000	0.006712	0.000000	0.000000	0.000000
17	0.010950	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
18	0.000620	0.000000	0.000000	0.022830	0.005709	0.000000	0.000000	0.000000
19	0.002247	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
20	0.001764	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
21	0.020253	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
22	0.000000	0.152498	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
23	0.176236	0.000000	0.000000	0.033886	0.000000	0.000000	0.000000	0.000000
24	0.000000	0.000000	0.000000	0.000000	0.000000	0.075917	0.000000	0.000000
25	0.000000	0.000000	0.000000	0.000000	0.000000	0.037784	0.000000	0.000000
26	0.000000	0.000000	0.000000	0.000000	0.000000	0.042267	0.000000	0.000000
27	0.000000	0.000000	0.000000	0.000000	0.000000	0.047280	0.000000	0.000000
28	0.000000	0.000000	0.000000	0.000000	0.011190	0.033392	0.000000	0.000000
29	0.000000	0.000000	0.000000	0.000000	0.060956	0.000000	0.000000	0.000000
30	0.000000	0.000000	0.000000	0.000000	0.016710	0.000000	0.000000	0.000000
31	0.000000	0.000000	0.000000	0.031079	0.000000	0.000000	0.000000	0.000000
32	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.250000	0.000000
33	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.134662
34	0.000000	0.000000	0.000000	0.000000	0.031230	0.000000	0.000000	0.000000
35	0.000000	0.000000	0.000000	0.000000	0.844732	0.000000	0.000000	0.000000
36	0.000000	0.000000	0.000000	0.000000	0.008806	0.000000	0.000000	0.000000
37	0.000000	0.000000	0.000000	0.000000	0.048130	0.000000	0.000000	0.000000
38	0.000000	0.000000	0.000000	0.000000	0.000000	0.035646	0.000000	0.000000
39	0.000000	0.000000	0.000000	0.000000	0.000000	0.022512	0.000000	0.000000
40	0.000000	0.000000	0.000000	0.000000	0.000000	0.016483	0.000000	0.000000

41	0.000000	0.000000	0.000000	0.000000	0.000000	0.025984	0.000000	0.000000
42	0.000000	0.000000	0.000000	0.042501	0.000000	0.000000	0.000000	0.000000
43	0.005531	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
44	0.000000	0.149754	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
45	0.000000	0.000000	0.000000	0.000000	0.000000	0.008819	0.000000	0.000000
46	0.000000	0.000000	0.000000	0.000000	0.055136	0.000000	0.000000	0.000000
47	0.000000	0.000000	0.000000	0.000000	0.000000	0.021672	0.000000	0.000000
48	0.017699	0.000000	0.000000	0.018115	0.015496	0.000000	0.000000	0.000000
49	0.000000	0.000000	0.000000	0.000000	0.042198	0.000000	0.000000	0.000000
50	0.000000	0.000000	0.000000	0.011166	0.000000	0.000000	0.000000	0.000000
51	0.000000	0.000000	0.000000	0.022689	0.000000	0.000000	0.000000	0.000000
52	0.000000	0.000000	0.000000	0.030777	0.000000	0.000000	0.000000	0.000000
53	0.000000	0.000000	0.000000	0.033670	0.000000	0.000000	0.000000	0.000000
54	0.000000	0.000000	0.000000	0.020267	0.000000	0.000000	0.000000	0.000000
55	0.000000	0.000000	0.000000	0.027133	0.000000	0.000000	0.000000	0.000000
56	0.000000	0.000000	0.000000	0.010105	0.000000	0.000000	0.000000	0.000000
57	0.000000	0.000000	0.000000	0.000000	0.000000	0.022104	0.000000	0.000000
58	0.000000	0.000000	0.000000	0.023812	0.000000	0.000000	0.000000	0.000000
59	0.000000	0.000000	0.000000	0.016567	0.000000	0.000000	0.000000	0.000000
60	0.000000	0.000000	0.000000	0.000000	0.000000	0.022950	0.000000	0.000000
61	0.000000	0.000000	0.000000	0.067725	0.000000	0.000000	0.000000	0.000000
62	0.000000	0.000000	0.000000	0.000000	0.000000	0.017995	0.000000	0.000000
63	0.000000	0.000000	0.000000	0.025852	0.000000	0.000000	0.000000	0.000000
64	0.000000	0.000000	0.000000	0.049494	0.065785	0.000000	0.000000	0.000000
65	0.059283	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
66	0.001526	0.074454	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
67	0.001531	0.045324	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
68	0.000696	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
69	0.000894	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
70	0.001264	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
71	0.000553	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
72	0.000000	0.000000	0.000000	0.000000	0.016424	0.000000	0.000000	0.000000
73	0.000000	0.000000	0.000000	0.000000	0.006936	0.000000	0.000000	0.000000
74	0.000000	0.000000	0.000000	0.015021	0.000000	0.000000	0.000000	0.000000
75	0.000000	0.000000	0.000000	0.000000	0.077746	0.000000	0.000000	0.000000
76	0.000000	0.000000	0.000000	0.000000	0.843851	0.000000	0.000000	0.000000
77	0.000000	0.070147	0.000000	0.018088	0.000000	0.000000	0.000000	0.000000
78	0.000425	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
79	0.000000	0.000000	0.000000	0.028819	0.000000	0.000000	0.000000	0.000000
80	0.052999	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
81	0.000000	0.000000	0.000000	0.000000	0.008617	0.000000	0.000000	0.000000
82	0.000000	0.000000	0.000000	0.000000	0.019966	0.000000	0.000000	0.000000
83	0.000000	0.000000	0.000000	0.000000	0.031159	0.000000	0.000000	0.000000
84	0.000000	0.000000	0.000000	0.000000	0.012637	0.000000	0.000000	0.000000
85	0.000000	0.000000	0.000000	0.027032	0.000000	0.000000	0.000000	0.000000
86	0.000000	0.000000	0.000000	0.010539	0.000000	0.000000	0.000000	0.000000
87	0.000000	0.000000	0.000000	0.013845	0.000000	0.000000	0.000000	0.000000
88	0.094556	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
89	0.000487	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
90	0.000000	0.009540	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
91	0.138056	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

92	0.000000	0.000000	0.312595	0.000000	0.000000	0.000000	0.000000	0.000000
93	0.000000	0.000000	0.152528	0.000000	0.000000	0.000000	0.000000	0.000000
94	0.000000	0.000000	0.000000	0.000000	0.964952	0.000000	0.000000	0.000000
95	0.000000	0.000000	0.000000	0.000000	0.009854	0.000000	0.000000	0.000000
96	0.000000	0.000000	0.000000	0.022256	0.000000	0.000000	0.000000	0.000000
97	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.206971
98	0.000656	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
99	0.000369	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
100	0.000000	0.000000	0.000000	0.000000	0.000000	0.009954	0.000000	0.000000
101	0.000000	0.000000	0.000000	0.000000	0.045538	0.000000	0.000000	0.000000
102	0.000000	0.000000	0.000000	0.000000	0.006649	0.000000	0.000000	0.000000
103	0.000000	0.000000	0.152528	0.000000	0.000000	0.000000	0.000000	0.000000
104	0.000000	0.000000	0.000000	0.000000	0.000000	0.013663	0.000000	0.000000
105	0.000000	0.000000	0.000000	0.000000	0.033912	0.000000	0.000000	0.000000
106	0.000000	0.000000	0.000000	0.000000	0.000000	0.016483	0.000000	0.000000
107	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.141236
108	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.134662
109	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.175498
110	0.000000	0.000000	0.000000	0.000000	0.000000	0.043933	0.000000	0.000000
111	0.000000	0.000000	0.000000	0.000000	0.000000	0.079078	0.000000	0.000000
112	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.206971
113	0.000000	0.000000	0.000000	0.000000	0.093369	0.072938	0.000000	0.000000
114	0.000000	0.000000	0.000000	0.038888	0.000000	0.000000	0.000000	0.000000
115	0.000000	0.000000	0.000000	0.000000	0.005876	0.054488	0.000000	0.000000
116	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.100000	0.000000
117	0.000000	0.000000	0.000000	0.035903	0.000000	0.000000	0.000000	0.000000
118	0.000000	0.123808	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
119	0.153586	0.000000	0.000000	0.000000	0.000000	0.006932	0.000000	0.000000
120	0.086955	0.138474	0.000000	0.046318	0.000000	0.039717	0.000000	0.000000